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## AMERICAN VETERINARY MEDICAL ASSOCIATION

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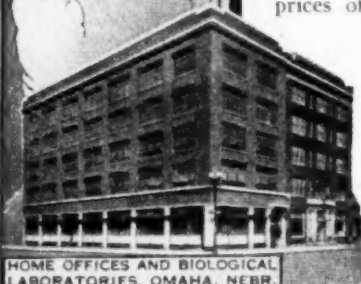
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in one  
GENERATION

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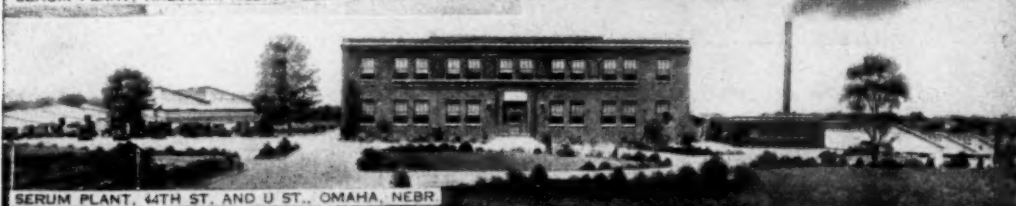
BUT, AMONG THE LONG POSTPONED  
WAYS OF STABILIZING THE DISPERSAL  
OF HUMAN PROVISIONS IN KIND,  
QUALITY AND VARIETY, THE HEALTH  
OF LIVESTOCK HAS YET TO BE FRANK-  
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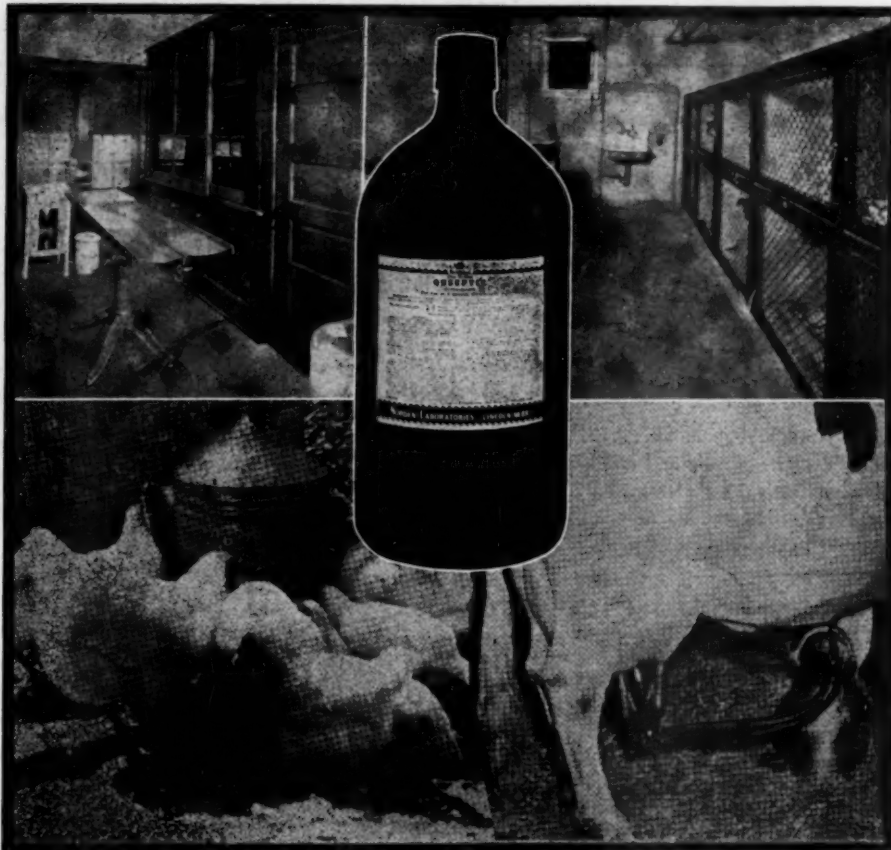


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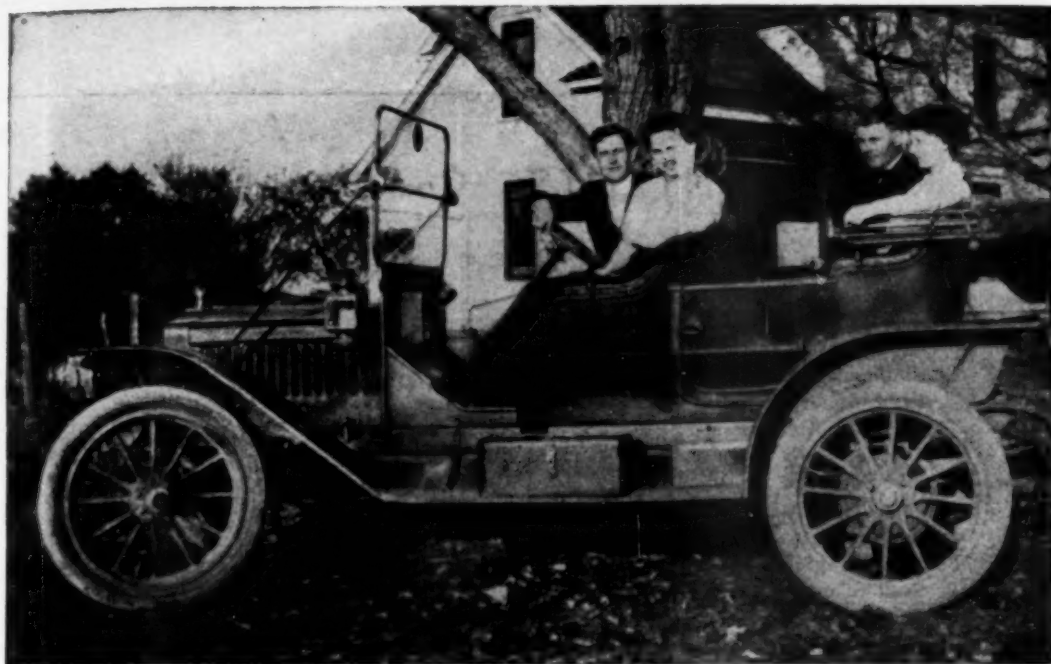
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## Way Back When

Way back in 1914 when this Maxwell automobile was still chugging over Midwest highways, that's when there first appeared in print the public declaration of a policy which two years earlier had been adopted by Companies which are now divisions of Allied Laboratories, Inc., that of confining



Published in the Country Gentleman, June 20, 1914, this advertisement first publicly declared the policy, inaugurated in 1912, of confining sales to members of the graduate veterinary profession. It is believed to be the first publicity ever attempted to teach laymen to discriminate between graduate veterinarians and non-graduates, empirics and "quacks."

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# Journal of the American Veterinary Medical Association

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## The Mexican Outbreak of Foot-and-Mouth Disease

A SUMMARY of developments, to Jan. 28, 1947, concerning the foot-and-mouth disease outbreak in Mexico has been prepared by the United States Bureau of Animal Industry. The following are extensive excerpts from this summary.

### EVENTS LEADING UP TO THE OUTBREAK

In a treaty, entitled "Safeguarding Livestock Interests Through the Prevention of Infectious and Contagious Diseases," between the United States and Mexico proclaimed in January, 1930, the two countries undertook not to permit the importation of ruminants or swine from countries where foot-and-mouth disease or rinderpest exists.

Beginning in October, 1945, the Mexican Government permitted the entry of two consignments of zebu cattle from Brazil, where foot-and-mouth disease is known to exist. The first consignment of approximately 130 head arrived in October, 1945, and the second, of 327 head, in May, 1946. Both shipments were landed on Sacrificios Island adjacent to Vera Cruz and later brought to the mainland, the first on December, 1945, and the second in September, 1946.

The U. S. Department of Agriculture, with the coöperation of the Department of State, protested strongly against the importations from Brazil, taking the position that they were in violation of the treaty and endangered the livestock industries of the two countries. The first of these protests was in October prior to the landing on Sacrificios Island of the first shipment of zebu bulls from Brazil. A strong protest was again made late in March, 1946, when information was received that a second shipment was being assembled in Brazil for consignment to Mexico. As the protests were unavailing, it became necessary to consider measures to prevent, as far as possible, transmission of any infection into the United States. Accordingly, the Secretary of Agriculture, on May 28, approved an amendment, effective June 5, to the Department regulation governing the inspection and quarantine of livestock im-

ported from Mexico, which placed severe restrictions on the entry of ruminants and swine from that country.

At a meeting of the Mexican—United States Agricultural Commission held in Los Angeles the week of July 22, 1946, the Mexican officials announced a decision to remove the second shipment of animals from Sacrificios Island out of Mexico. On the basis of that decision, resolutions were adopted by the Commission regarding future procedures. These were approved by the Secretary of Agriculture of the United States, and the Department proceeded with measures to carry them out.

The Department assigned two veterinarians to participate with two Mexican veterinarians in a joint survey of disease conditions in Mexico as provided in the Los Angeles resolution, and they proceeded to Mexico City on Sept. 1, 1946.

It developed that the highest authority in Mexico did not approve of the decision announced by the Mexican representatives at Los Angeles to reexport the Brazilian cattle on Sacrificios Island. Instead, the Mexican authorities decided to transfer the animals to a ranch in the State of Vera Cruz not far from the port. This was accomplished about September 28. In the meantime, beginning about September 10, the joint veterinary group has proceeded with its inspection on the ranches and in the districts where the animals included in the importation of October, 1945, were located. The survey was completed about Oct. 14, 1946. No evidence of the existence of foot-and-mouth disease was found, and the special restrictions, which involved quarantine at the United States border, were revoked effective October 18, thus permitting the importation of livestock from Mexico under the same requirements that had been in effect prior to the restrictions effective June 5. No cattle or other ruminants or swine were permitted to enter the United States from Mexico while the restrictions were in effect.

The Mexican Government then issued a decree, effective Oct. 25, 1946, which provided as follows:

Exportation of the zebu bulls of Brazilian origin which were recently brought onto the mainland from Sacrificios Island is prohibited for one year beginning Oct. 25, 1946. The exportation of any of those animals after Oct. 24, 1947, can be made only upon permits granted by the Minister of Agriculture. Before such permits are issued the animals must be identified and inspected and export certificates issued.

As a further precautionary measure, the decree requires the registration of these animals by the Minister of Agriculture showing the names of owners and locations. Owners must report sickness or death among the animals and the Ministry of Agriculture veterinarians must make periodic inspections. Heavy fines are prescribed for failure on the part of the owners, custom brokers, or individuals, to comply with provisions of the decree and federal officials may be dismissed if they fail to carry out its terms.

The first report of a vesicular disease in Mexican livestock was received by the U. S. Department of Agriculture Dec. 18, 1946. Immediately on invitation of Mexican authorities, the Bureau of Animal Industry sent two experienced veterinarians, Dr. M. S. Shahan and Dr. A. E. Wardlow, to Mexico to participate in the steps being taken to arrive at a diagnosis. Foot-and-mouth disease is one of several vesicular diseases having somewhat similar symptoms.

Animal inoculation tests, requiring several days, are necessary for positive diagnosis. These were made by the Mexican authorities and the Bureau's representatives. The diagnosis of foot-and-mouth disease was confirmed by Dr. Shahan, the Bureau's specialist on virus diseases, who also participated in the field work that suppressed the outbreak of that disease in southern California in 1929. Dr. Wardlow and the Mexican veterinarians concurred in the diagnosis.

#### PROTECTIVE MEASURES TAKEN

On learning by telephone, December 26, that the malady had been definitely diagnosed as foot-and-mouth disease, Bureau officials in Washington dispatched instructions immediately to inspectors in charge at border stations to withhold inspections of all ruminants and swine offered for importation, which had the effect of stopping their entry. A formal order prohibiting such importations was issued in accordance with the governing statute and was signed by the Secretary effective Jan. 3, 1947, the day it appeared in the *Federal Register*.

From Dec. 31, 1946, to Jan. 3, 1947, representatives of the Bureau of Animal Industry and the Office of Foreign Agricultural Relations, meeting in Washington, D. C., discussed the problems of control and eradication of the

outbreak with two Mexican officials, Under Secretary of Agriculture for Livestock, Oscar Flores, and Dr. Fernando Camargo, in charge of livestock sanitary laboratory control work. They were accompanied by Mr. Don Stoops, a United States assistant agricultural attaché.

The United States assigned to duty in Mexico Dr. M. S. Shahan of the Bureau's Pathological Division, Washington, D. C.; Dr. A. E. Wardlow, Sacramento, Calif.; Dr. H. F. Kern, Laredo, Texas; and Dr. Cesar Clavell, San Juan, Puerto Rico. The first two had participated in the diagnosis of the disease.

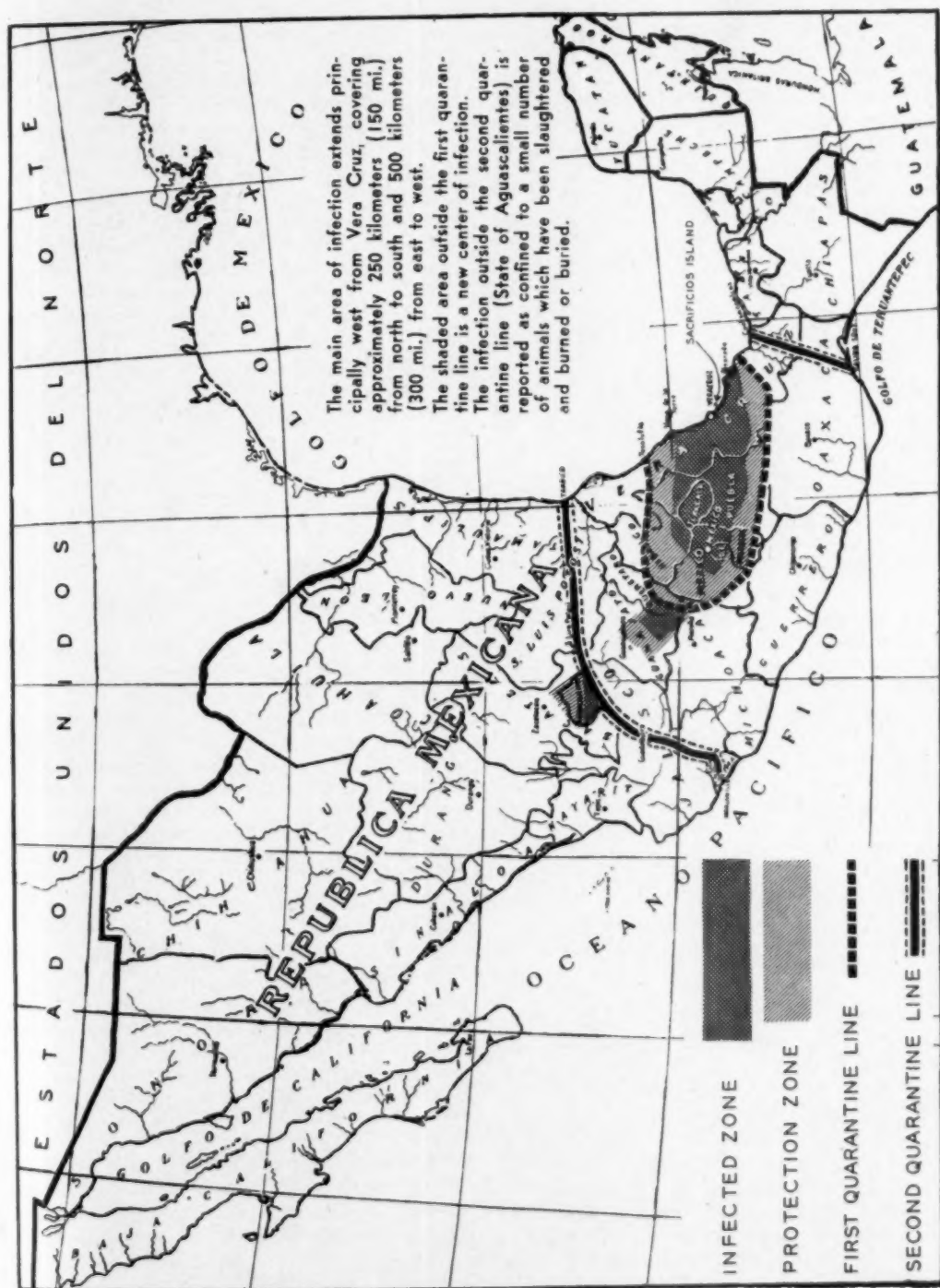
The disease first appeared in the State of Vera Cruz about Nov. 1, 1946, on the ranch where the second importation of the Brazilian bulls had been placed. The disease soon appeared in the adjoining states of Puebla, Hidalgo, Mexico, Tlaxcala, and the Federal District. By the latter part of January, the infection appeared also in the states of Oaxaca, Guerrero, Morelos, and Aguascalientes. The Mexican government took measures to establish a quarantine line around the area mentioned, including the use of troops, in an effort to prevent a further spread of the disease. As an additional precaution, the control officials designated a second quarantine zone around the affected area. It is the stated purpose of the Mexican authorities to eliminate, by the slaughter method, any sporadic cases of the disease that appear outside the quarantine line.

The appearance of the disease in Mexico carries unusual significance, both because of the large importations of cattle which the United States normally receives from Mexico and because of the long common boundary of the two countries. During the period from October 18 to December 27, when importations of livestock across the border were permitted, approximately 151,800 cattle entered the United States.

#### STATEMENT OF GENERAL POLICY AND AUTHORITY

**Policy.**—An established policy of the U. S. Department of Agriculture is to exclude the foreign plague, foot-and-mouth disease, from the United States by rigid quarantine and, in cooperation with states, to suppress, by prompt slaughter of affected and exposed animals and other effective means, any outbreaks that may occur in this country. This policy has a scientific basis and is not prompted by motives of economic competition. It is the Department's policy also to cooperate, within the limits of its authority, with officials of foreign countries in controlling any outbreaks that may occur within their jurisdictions.

It is the Department's further policy to make prompt public announcement of significant developments relating to foot-and-mouth disease of concern to citizens of the United States.



Map showing the reported areas of foot-and-mouth disease infection as of about Feb. 1, 1947. (Modification of a map supplied by the U. S. BAI.)

**Authority.**—Under present federal statutes, the Department has authority to cooperate, both formally and informally, with states and informally with foreign governments in suppressing outbreaks of this disease. Informal cooperation with foreign governments includes the furnishing of information and a limited amount of technical assistance by trained personnel. But the present authority does not extend to engaging in eradication programs on a substantial scale, even when requested to do so by foreign officials.

#### ADDITIONAL SERVICES AND PROBLEMS

Because of its extreme contagiousness, foot-and-mouth disease necessitates a very tight and rigidly enforced quarantine if its spread is to be prevented. If it should become established in the northern part of Mexico near the United States boundary, the danger that some infection would now and again be conveyed across the border would never end. The need to restrict the present outbreak to the smallest possible area is apparent, since a small area can be more closely guarded than a large one.

The Bureau of Animal Industry is investigating the condition of cattle that entered the United States from Mexico during the time that importations were permitted. Special consideration is being given to those received from Oct. 18, 1946, when the border was reopened, to December 27 when it was closed. Lists of all shipments of Mexican cattle imported during that period have been furnished Bureau offices in all the states of destination with instructions that appropriate investigations be made as quickly as possible, and close supervision maintained over the herds and districts involved.

Prior to June 5, 1946, when the first quarantine of the year was established, 18 Brazilian bulls entered the United States by way of Mexico. These were destined to and remain in Texas. Their condition is being closely watched.

#### HIGHLIGHTS OF THE SITUATION

The outbreak which first occurred in the State of Vera Cruz in east-central Mexico has spread, since late in 1946, to nine Mexican states and the Federal District—for the most part in a westerly direction.

The area containing the affected herds is under quarantine maintained by Mexican authorities with the aid of troops. About two million head of cattle are estimated to be in the quarantine area and about nine million in other parts of Mexico.

At the invitation of the Mexican authorities, the United States has five veterinarians, all experienced in foot-and-mouth disease control, on the scene of the outbreak to render technical

assistance. Another is organizing the border defenses.

Department of Agriculture officials have made strong representation, through official channels, urging the prompt completion of a substantial fence along the entire United States-Mexican border (1,905 miles). Such a fence, of which only segments thus far exist, is needed to help maintain an effective border quarantine.

Since the outbreak in Mexico, no cases of foot-and-mouth disease have appeared in the United States, nor have any appeared in the northern states of Mexico. The nearest affected herd is about 350 miles from the border.

One area of potential danger is in the vicinity of Matamoros, Mexico, near the Texas border close to the Gulf coast, approximately opposite Brownville, Texas. At least 50 zebu bulls obtained from Brazil in 1946 are on several ranches in that area, but none has yet shown signs of infection.

So far as determined, comparatively few of the affected cattle in Mexico have been slaughtered as a means of control and eradication.

Officials of the U. S. Bureau of Animal Industry . . . are prepared to engage in active disease-eradication work, such as the enforcement of quarantines and slaughter and disposal of affected animals immediately, if cases of foot-and-mouth disease should appear in the United States.

The Bureau has already selected, for the purpose, qualified key veterinarians and instructed them to be ready for immediate assignment. Much of the equipment is already available.

#### Later Developments

In a supplement, dated February 7, 1947, to the foregoing summary, the Bureau of Animal Industry reported three resolutions based on recommendations of the Subcommittee on Animal Industry of the Mexican—United States Agricultural Commission. This subcommittee, consisting of three representatives of each country, under the joint chairmanship of Dr. S. O. Fladness, assistant chief of the U. S. BAI, and Sr. Oscar Flores, sub-secretary for livestock of the Mexican Ministry of Agriculture, held meetings during late January to consider the situation then existing in Mexico.

The first resolution recommended immediate and adequate scientific, technical, and financial cooperation between the respective governments in all measures looking to the control and eradication of foot-and-mouth disease in

Mexico, recognizing that the disease had already become so widespread that the facilities of Mexico alone would be insufficient to cope successfully with it. This resolution, dated January 25, 1947, has been accepted by the Mexican and United States Governments through diplomatic exchanges.

The second resolution recommended that the United States secure and dispatch to Mexico, at the earliest moment, equipment and personnel to establish and maintain an urgently needed and rigid quarantine around the area of present infection.

The third resolution sets forth several extremely serious aspects of the situation, namely: that foot-and-mouth disease has already existed in Mexico for about three months and has invaded at least eight states there (see map); that the low mortality and existence of a large number of recovered animals has lessened public interest; that the population of the infected zone (6 million people) is almost one-third of the entire nation, and that there are at least one million affected or exposed domestic animals in that zone, including at least 650,000 cattle; that eradication of the disease will seriously upset the economy of the zone and affect the entire nation; that the costs of control and eradication will probably be enormous; that the extremely variable topographic and climatic conditions are real obstacles to successful eradication; that the available technical personnel, equipment, and materials are greatly limited; and, finally, that it will be necessary to destroy all wild ruminants and wild swine in the zone, a truly formidable undertaking of itself.

Based on these considerations, the Subcommittee has recommended: (1) utmost control to prevent movement of susceptible animals and dangerous products out of the infected zone, and to prevent the movement of such animals into the zone except for immediate slaughter; (2) methodical and immediate destruction of all susceptible animals in newly infected and directly exposed herds and flocks, followed by thorough disinfection of premises; also, an orderly movement to slaughter houses within the zone of animals either not yet affected or entirely recovered and apparently healthy; (3) immediate destruction of all wild ruminants and wild swine in the zone and such adjacent areas as may be necessary; (4) immediate steps to establish a joint Mexican—United States foot-and-mouth disease research organization, providing within the affected zone necessary buildings, equipment, funds, and personnel; (5) that, whenever the disease appears outside the presently affected area, the methods outlined in (2) and (3) be immediately adopted and applied in all instances.

Consistent with the foregoing recommendations, Secretary of Agriculture Anderson, on February 7, 1947, asked Congress for legislation to enable the USDA to cooperate with any other American country in the control and eradication of foot-and-mouth disease or rinderpest. The legislation was promptly drawn and approved by

the agriculture committees of both the Senate and the House of Representatives.

#### OTHER EVENTS

Meanwhile, the greatest concern was felt throughout the United States, and particularly in the border, range, dairy, and corn-belt states which are the centers of the beef and dairy cattle and swine industries.

In Texas, on January 31, the state legislature rushed through an emergency bill providing \$150,000 to prevent invasion of the disease from Mexico.

In Chicago, the National Joint Livestock Committee, representing 134 livestock groups, met and passed resolutions urging government officials to take drastic steps to protect American herds and flocks, including the building and patrolling of a woven wire fence along the entire Mexican border, 1,905 miles in length.

Special meetings of state veterinarians were held to plan full cooperation with the federal Bureau of Animal Industry and to correlate protection measures.

And, finally, *Life* magazine which, during the meat shortage, had attacked editorially (Oct. 14, 1946, issue) U. S. policy and our sanitary embargo against cattle imports from foot-and-mouth disease infected countries, got around to admitting its mistake (see *Life*, issue of Feb. 10, 1947, pp. 6-8), saying that "... there is more to be said for the protectionist side of the controversy than *Life's* editors then realized."

\* \* \*

At press time (February 20), the Senate had passed the enabling act requested by Secretary Anderson, and the House was expected also to pass it at once. Hon. George W. Gillie (D.V.M.), congressman from Indiana, is handling the legislation in the House. He introduced the emergency bill on February 10, and supported it in a speech before the House on the same date. Previously, Congressman Gillie headed a special five-man subcommittee of the Committee on Agriculture to study the situation and conduct informal hearings, including conferences with BAI Chief B. T. Simms.

Following final approval of the enabling act, new conferences will be held with Mexican officials to activate the invited cooperation.

Also at press time, no additional outbreaks of foot-and-mouth disease in Mexico had been reported outside the infected zone.

# Muscular Dystrophy (White Muscle Disease) in Young Calves

L. R. VAWTER, D.V.M., M.S., and EDWARD RECORDS, V.M.D.

Reno, Nevada

SPONTANEOUS muscular dystrophy, often called "white muscle disease" or "stiff lamb disease," has been extensively observed among lambs under 1 month of age in this country as well as in other parts of the world.

This disease has been described by Metzger and Hagan,<sup>1</sup> Marsh,<sup>2</sup> Udall,<sup>3</sup> and ourselves.<sup>4</sup> Hobmeier<sup>5</sup> described what may be a similar disease in horses and pigs.



Fig. 1—Diffuse myocardial dystrophy, left ventricle; calf, herd 3.

Hjarre and Lilleengen<sup>6</sup> described a condition which they termed "white flesh" which has occurred in 6- to 10-week-old calves in European countries since the nineteenth century. The symptoms and dystrophic lesions

Presented before the Section on General Practice, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

Technical contribution from the Nevada Agriculture Experiment Station, Reno, Nev.

Associate in veterinary science (Vawter); and research professor (Records) in the Department of Veterinary Science, University of Nevada, and the Nevada Agricultural Experiment Station, Reno.

The authors gratefully acknowledge the valuable assistance of Miss Agnes Hilden of the Department of Veterinary Science, and of Mr. M. R. Miller, station chemist.

they described resemble the malady we have recently encountered in somewhat younger calves.

Our observations show that spontaneous muscular dystrophy may occur in calves 10 days to 2 months of age while still nursing their dams. The disease appears to be identical with muscular dystrophy of young lambs in respect to the gross and microscopic changes in the skeletal and heart muscles. In some calves, a rather striking departure from the customary dystrophic disease affecting the skeletal muscles has been observed, and the designation of "stiff calves" is not applicable in all cases. It is quite probable that this disease has been previously observed by veterinarians and livestock men, but we have been unable to discover any description of it in the literature other than the report of Hjarre and Lilleengen.

## SYMPTOMS AND POSTMORTEM LESIONS

Two rather distinct types, the peracute and subacute, were observed. Both of them occurred among the calves in herd 3 in 1946. The peracute type which appeared in some of the younger calves, 10 days to 3 weeks of age, was characterized by sudden onset of dullness, respiratory distress, and frothy or blood-tinged nasal discharge, terminating fatally in six to twelve hours. Some calves were found dead without previous evidence of illness.

At an autopsy, the peracute cases exhibited marked passive pulmonary congestion and edema often accompanied by a variable amount of blood-tinged fluid in the pleural cavity. The opened heart revealed very conspicuous yellowish or gray foci or streaks of myocardial dystrophy, often involving most of the left ventricle (fig. 1). In some cases, well-defined lesions were also found in the interventricular septum and in the region of the musculi papillaris, but no lesions were observed in the right side of the heart nor in the walls of the auricles in any instance (fig. 2). This myocardial degeneration may not be readily apparent on the epicardial or endocardial surfaces.

There was no evidence of coronary thrombosis, but the possibility of angiospastic occlusion affecting deeper bundles of muscle fibers as suggested by Pappenheimer<sup>7</sup> can not be ignored. Houchin and Smith<sup>8</sup> recently reported that sudden death from myocardial failure may occur among vitamin E deficient rabbits showing evidence of advanced muscular

dystrophy. The predominant localization of dystrophic lesions in the myocardium in some calves appeared to be responsible for the acute cardiac failure and death before the skeletal muscles became involved to any great extent.

The skeletal muscle lesions found in some peracute cases were so inconspicuous they might readily have escaped detection on routine autopsy examinations. The sudden deaths accompanied by pulmonary congestion and edema observed in the first few cases examined led everyone concerned to suspect bacterial pathogens or an unidentified pneumonitis virus. Cultures failed to yield any microorganisms which could be regarded as etiologic. In 2 cases, the heart blood and lungs were culturally sterile.

The subacute cases developed more slowly and exhibited stiffness of the legs, slightly arched back, reluctance to move about, often refusal to nurse, the swallowing of fluids with difficulty, and a great deal of bawling. Inability or refusal to nurse and bawling were the first symptoms noticed among affected calves in herd 1, in 1942. Stiffness and prostration appeared in two or three days to a week later. There was no rise in temperature until the stage of prostration was reached.

Very little opportunity was afforded for blood examinations, as most of the calves were examined clinically or *post mortem* on the respective ranches; all others except 1 were dead on arrival at the laboratory. Three blood examinations in 1 calf made during a period of six days showed red cells and leucocytes and hemoglobin to be normal. Inorganic serum calcium of 11 mg. and inorganic serum phosphorus of 6.25 mg. per 100 cc. were regarded to be within normal limits.

At autopsy, the subacute cases showed bilateral involvement of affected muscles. White or greyish yellow streaks often extended throughout the length of a muscle or the entire muscle structure, giving it a dry, cooked fish-meat appearance. Frequently, the outer layer of muscle fibers was not visibly affected but, on incision, the deeper portions showed extensive lesions.

Generally speaking, the lesions in the skeletal muscles of calves were not as widely distributed as in lambs, and the muscles involved showed individual variations. Extensive lesions have been found in the rhomboideus and cleido-occipitalis of the neck, the serratus ventralis, deep pectoral, triceps, longissimus dorsi and intercostals of the foreleg and thoracic regions, the semimembranosus, semitendinosus, pectineus, and the adductor muscles of the hind legs.

The lesions found in the tongue and its accessory muscles and the absence of any visible oral lesions apparently explains the inability to nurse, or difficulty in swallowing, shown by some calves (fig. 3). No visible macroscopic or microscopic lesions were detected in smooth muscle structures, such as the esophagus or intestines. Dystrophic lesions were also found in the myocardium of 2 calves which exhibited extensive lesions in the skeletal muscles, and it was quite probable that myocardial lesions existed in other subacute cases with skeletal muscle involvement, but they

may have escaped notice in the casual examination.

#### HISTOPATHOLOGY

With one exception, all of the tissues examined microscopically were obtained from fatal, spontaneous cases in calves. One calf, representing the subacute form, was sacrificed when moribund after a six-day observation.

The initial changes observed in skeletal musculature appeared to be atrophic degeneration



Fig. 2—Section from left ventricle near musculi papillaris; calf, herd 4.

affecting individual or related groups of fibers. Shrinkage in diameter and length, interruption of continuity, interstitial edema, and leucocytic infiltration generally occurred in the order given with the ultimate formation of a dense mass of basophilic staining cells composed of muscle nuclei, polymorphonuclear leucocytes, histiocytes, and giant cells. In some instances, interstitial leucocytic invasion appeared prior to any distinct atrophic change in the muscle fibers. The muscle striations remained visible until all of the cytoplasm disappeared, the muscle nuclei persisted, and evidence of regeneration with extension of fibrils were seen in some locations (fig. 4, 5).

Lesions in the tongue and accessory muscles, not always visible macroscopically, were found upon microscopic examination. In some muscles such as the longissimus dorsi and others, amorphous, relatively noncellular, baso-

philic staining foci of calcareous degeneration appeared (fig. 6). That such deposits were calcareous was supported by the gritty nature of the muscle tissue, difficulty in sectioning, and marked increase in the calcium content. Muscle tissues taken from lambs presenting similar lesions were examined by M. R. Miller, station chemist. The calcium content expressed as CaO was 0.56 to 0.63 per cent, or about 30

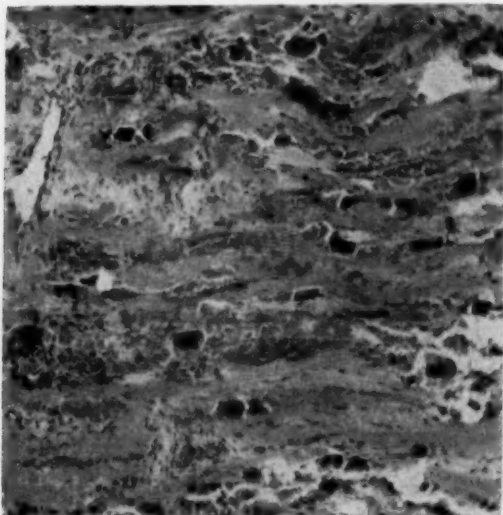


Fig. 3—Calcareous and dystrophic degeneration tongue; calf, herd 1.

times normal<sup>2</sup>. Phosphorus expressed as P<sub>2</sub>O<sub>5</sub> was found to be 0.98 to 1.05 per cent, or two to three times normal.

The histologic changes in the myocardium were confined to the walls of the left ventricle and interventricular septum (fig. 7). These heart lesions were much more conspicuous and extensive than heretofore observed in lambs with "white muscle" disease. The initial degenerative changes appeared to be typical of coagulation necrosis. Individual fibers or groups of the same showed flocculation of the cytoplasm, pyknosis, disappearance of the nuclei, and loss of fiber outline (fig. 8). Leucocytic infiltration occurred as in the skeletal muscles but evidence of regeneration from surviving muscle cells and calcareous infiltration were not observed. The severe degenerative changes in the region of the musculi papillaris obviously contributed to the functional failure of the chordae tendinae and bicuspid valves.

The first case which came to our notice in April, 1922, was a 2-month-old Hereford calf on the University Farm, which had been unthrifty from birth and subsequently developed a progressive myopathy terminating in motor paralysis and prostration. When sacrificed for autopsy, generalized muscular dystrophy involving many of the skeletal muscles was found. At that time, it was recognized that the muscle lesions closely resembled those previously observed in "white muscle" disease of lambs, grossly and histologically. The tissue sections from this calf were compared to those

recently obtained from calves, and the histologic changes appear to be identical. No more cases among calves were encountered until May, 1942.

**Herd 1.**—In May, 1942, a month-old Hereford calf showed muscular stiffness, difficulty in swallowing, and inability to nurse. It was observed for six days, then sacrificed when prostrated with motor paralysis. Generalized dystrophic lesions were found in the skeletal muscles and tongue. The owner stated that at least 10 or 12 young calves had died after manifesting symptoms of muscular stiffness, prostration, and ultimate starvation similar to this one. A recurrence of this malady in April, 1946, was reported by the owner, but the exact morbidity was not determined.

**Herd 2.**—Ten calves were lost in 1945 and 3 in 1946, all of them believed to have been of the peracute type.

**Herd 3.**—The first diagnosed cases occurred in March and April of 1946; also the most severe losses so far were encountered.

A group of 22, 2-year-old first calf heifers gave birth to 21 living calves at term during March and April. One heifer had failed to

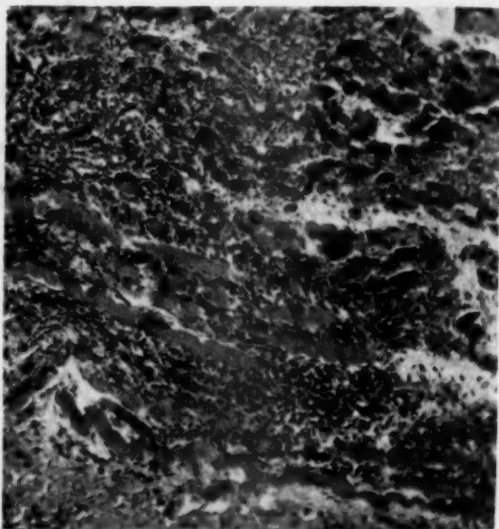


Fig. 4—Triceps muscle; calf, herd 4. Hematoxylin-eosin, x 100.

conceive. Nine of the first 14 calves born among this heifer group died between the ages of 10 and 21 days. Both types of this malady, the peracute and subacute, were observed clinically and at autopsy. Generalized skeletal muscle lesions or localized cardiac lesions were found in 6 calves examined. No clinically recognized cases occurred among the calves from a group of mature cows kept with, and fed the same hay as, the heifer group. This may be significant and possibly indicates some storage reserve in mature females.

**Herd 4.**—One peracute case occurred in a 3-week-old calf in 1946. Symptoms of pneumonia and respiratory distress appeared suddenly, and it died on the same day while being loaded for transportation to Reno for examination.

Marked myocardial lesions were found in the left ventricle along with pulmonary congestion and edema indicative of acute heart failure. Mild lesions were also found in the triceps and pectineus muscles which were confirmed by microscopic examination. Another calf which died very suddenly a few days previously was not examined. A third sickened, had difficulty in swallowing or nursing, and finally recovered after hand feeding with milk from another cow.

As near as can be determined, at least 36 cases of muscular dystrophy have occurred in these four herds since 1942. This does not include the undetermined loss in herd 1 in 1946.

Twelve calves have been examined *post mortem*. All of the recorded cases occurred between February and May, the majority in March and April.

The methods of feeding and herd management were similar in all herds having this trouble among the young calves. They were carried on mixed native grass pastures during the summer and until late November, when the feeding of mixed native grass hay or alfalfa mixed with native grass hay or clover raised on the respective ranches was begun and continued until the following spring. During the winter, the herds were usually

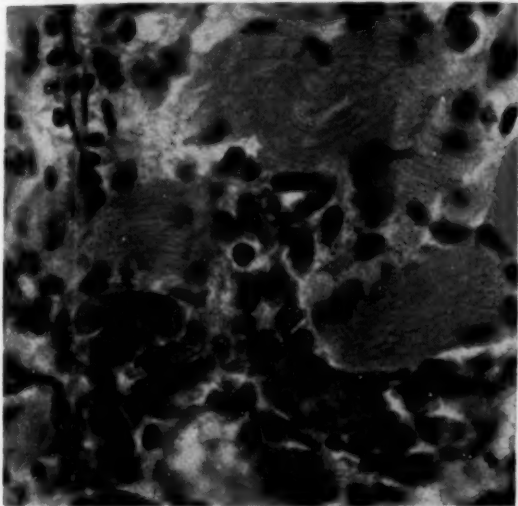


Fig. 5—Triceps muscle with surviving muscle nuclei and giant cells. Hematoxylin-eosin, x 500.



Fig. 6—Longissimus dorsi muscle with dystrophic and calcareous degeneration; calf, herd 1. Hematoxylin-eosin, x 100.

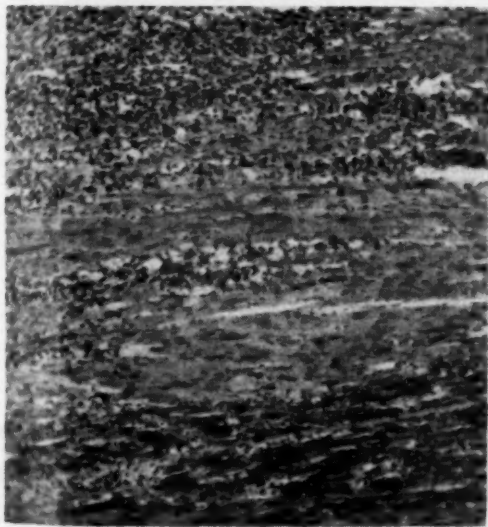


Fig. 7—Normal muscle fibers in left ventricle wall isolated by areas of leucocytic infiltration and coagulation necrosis; calf, herd 3. Hematoxylin-eosin, x 100.

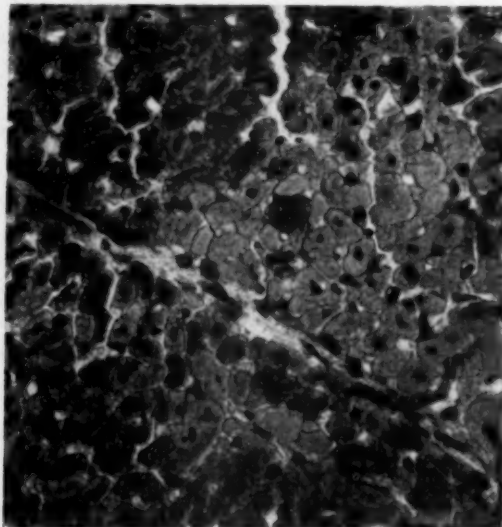


Fig. 8—Coagulation necrosis of muscle fibers in myocardium surrounding isolated normal fibers; calf, herd 4. Hematoxylin-eosin, x 500.

allowed to run out on the open fields even though little or no palatable feed may have been available there. Two of the herds were driven to summer range in the Sierra Nevada Mountains about May 1 of each year and usually returned to the home ranch during October.

Breeding usually started in June while on pasture or summer range, and calving usually started in March and continued until May. Quite often in this region, the spring season is late, cold, and very unfavorable for pasture growth until about the middle of May.

The outstanding feature in the feeding history of all herds involved was that the cows were compelled to subsist mainly on hay of inferior quality during the latter half of the gestation period. This had to be continued for several weeks after calving due to the lack of green pasture in March and the early part of April. None of the herds were fed grain or any other concentrates, such as cottonseed cake.

The hay fed to the pregnant females was either about 2 years old, overmature when cut, carried a high percentage of overmature broncho or brome grass, was badly damaged by frosts before cutting, or remained in the fields a week or more after cutting because of weather conditions or labor shortage. One lot of frosted hay was baled damp and burned badly in the bales. The group of heifers having the highest calf loss were fed this hay during part of the winter.

The females in all the herds were in average to excellent physical condition, the reproductive rate varied from 85 to 95 per cent, and the calves appeared normal at birth. It appeared that the plane of nutrition was adequate for conception and full term pregnancy but inadequate to maintain normal health in the nursing calves. The malady disappeared and calf losses stopped in a week to ten days after the cows with calves and pregnant females were placed on green pasture or the diet changed to leafy alfalfa hay in herd 4, which suggests a deficiency disease quickly alleviated by green forage or good alfalfa hay.

#### DISCUSSION AND CONCLUSION

Following the discovery by Evans and Bishop<sup>10</sup> that a substance subsequently designated as vitamin E was an essential dietary factor for reproduction in rats, it was recognized by Evans and Burr<sup>11</sup>, Goettsch<sup>12</sup>, and many others that paralysis and dystrophic changes appeared in the skeletal muscles of young rats suckling females being maintained on diets deficient in, or devoid of, vitamin E. A similar observation in connection with puppies was reported by Anderson, Elvehjem, and Gonce<sup>13</sup>. The degenerative changes have been described by Olcott<sup>14</sup>, Evans, Emerson, and Telford<sup>15</sup>, by Pappenheimer<sup>7</sup>, and others. Generalized muscular dystrophy has also been experimentally induced in guinea

pigs, rabbits, and some fowl by using diets deficient in, or devoid of, this substance. Pappenheimer<sup>16</sup> also pointed out that vitamin E plays an important rôle in skeletal muscle metabolism of the common laboratory animals and ducklings. Maynard<sup>17</sup> considers that milk in general must be regarded as a rather poor source of vitamin E. Willman and associates<sup>18, 19, 20</sup> recently reported that vitamin E prevented and cured "stiff lamb" disease. Marsh<sup>21</sup> also reported similar results with wheat-germ oil.

The vitamin E requirements of cattle have not been definitely established, and there is some evidence that it may not be needed by goats for reproduction<sup>22</sup>. Under natural conditions, muscular dystrophy occurs in lambs and calves at the age when they are mainly dependent on milk for nourishment.

The symptoms and the anatomical lesions observed in these calves very closely resembled those found in spontaneous, muscular dystrophy of young lambs and those induced in lambs, rats, rabbits, guinea pigs, and some birds by diets deficient in vitamin E.

In the absence of supporting experimental evidence, it would be presumptuous to conclude that a deficiency of vitamin E or other synergistic substances in the diet was entirely responsible for the condition reported. The suppression of the malady within a week to ten days after the diet of the breeding cows was changed to good, leafy alfalfa hay or green pasture, both being generally considered to be good sources of vitamin E<sup>23, 24, 25</sup>, suggests however that these foods contained the essential protective factors.

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<sup>27</sup>Morrison, F. B.: *Feeds and Feeding*, 20th ed., (1936): 1012, table V.

pressure. Such animals lie down most of the time. They may show symptoms of retching and often vomit rumen contents. The treatment centers around emptying the digestive tract.

The objective is to be attained with soapy high enemas and arecoline (1/8 gr.) subcutaneously. Few animals not able to stand recover, but recovery is quite certain if the patient can be urged to walk about. Blood transfusion deserves trials, the authors add.

The brief sketch assumes considerable importance in the face of the recent histamine theory of founder, and the forced walking, which the authors find beneficial, also conforms to the long experience in foundered horses. It will be noted that ovine founder was not called laminitis.

Mineral oil interferes with the absorption of carotene, vitamin D, calcium, and phosphorus and is an adulterant to the Food and Drug Administration. The Council on Food and Nutrition of the American Medical Association calls attention to its harmful effects.

### Galactagogue Estrogens Cause Nymphomania

In tests on the augmentation of lactation in the phase of decline, Peeters (*Vlsch. Diergenkdg. Tijdschr.*, 14, 1945: 80) demonstrated that extracts of the anterior pituitary gland and of the thyroid increased the milk secretion markedly during the period of administration only, while nonhormonal estrogen pellets implanted subcutaneously had a more persistent effect in both cows and heifers. Often, however, these interventions provoked nymphomania. — *Abstr. Rec. Méd. Vét.*, 122, (Sept., 1946): 421.

*Resistance to Penicillin.* — Since penicillin escapes from the body rapidly, unless doses can be given every three or four hours and in sufficient concentration to keep the blood antibiotic, pathogenic organisms acquire resistance to its action. Penicillin-resistant organisms have a tendency to increase in virulence and spread the infection instead of arresting it. — *Wayne H. Riser in North Am. Vet.*

Malnutrition and disease cause livestock losses.

### Founder in Sheep

Thorp (Jr.) and Cole (*M. S. C. Vet.*, 6, 1946: 77) describe founder in sheep as follows:

The relation of founder to overeating has been definitely established. Founder may occur under conditions of management similar to those seen in overeating. Both conditions may occur in the same flock at the same time. This disease usually results from metabolic disturbance associated with excessive consumption of grain feeds. The animals show lameness in one or all feet. The hoof heads [coronets] are sensitive to applied

## Historical Sketches and Memoirs

### III. The General Practitioner (Continued from February Journal)

L. A. MERILLAT

Chicago, Illinois

#### 21.

The brief reference to veterinary dentistry brings to mind a paper\* presented at the annual meeting of the national association in 1896, which still **New Profession Looms** rings true. The text attempted to show that dentistry had reached such a height of popularity among the better class of horsemen that forming a "veterinary dental profession" was in the offing. There was a sizeable noncollegiate membership of not less than 200 in sight. A college of veterinary dentistry was straining for patronage in Detroit. Historian D. M. Campbell once said that it was sponsored by Dr. A. A. E. Grange who obviously abandoned the idea. In Chicago, the same notion was developed by Charles E. Sayre, M.D.C., D.D.S., M.D., the professor of comparative anatomy, College of Dentistry, Northwestern University, and of dentistry at the Chicago Veterinary College. He was a graduate of both schools and also of the Hahnemann Medical College, prominent homeopathic institute of Chicago, a son-in-law of J. A. Bovett, important nongraduate pioneer, a student of Horse Dentist Craig, and a skillful artisan with a horse's mouth parts. This educational background and affluence were excellent and the opportunity was attractive. Truly, a new profession was about to be born, and not perhaps. The paper (*loc. cit.*) was a protest against the movement. It emphasized that while there was both an orbit and a personnel available, the better course was for the chairs of surgery to give more attention to dentistry and attribute proper importance to it. Though 51 years old, that suggestion is still valid (and still ignored). There is hope, however, that the teeth of the domestic herbivores will be discovered by some future generation.

The name proposed for the new organization was "American Veterinary Dental Society," and advancement of the new science

\*Merillat, L. A.: Veterinary Dentistry. Proc. U.S.V.M.A., (1896): 219-222. Published for the Association by J. Comp. Med. & Vet. Archiv., 18, Dec., 1896.

was the object. Those who qualified for membership were to be granted a V.D.S. Drunk from the financial success of House, Craig, Sayre, *et al.*, the promoters gave the progress of human dentistry as the precedent. Dr. Sayre, the master mind of the movement, who had the distinction of adding new degrees—all properly earned—to his name, turned his back on the adventure upon winning more than average fame as a human surgeon and left the new society and profession to die aborning. Dr. Sayre wrote (*Am. Vet. Rev.*, 15, (June, 1891): 147): "At one time, I thought we needed veterinary dentists as well as human dentists, but the field of usefulness is too limited." The paper above mentioned, the fling at veterinary dental education at Detroit, and the chairs in dentistry which sprang up in better patronized veterinary colleges are the only records of the strange libation—or was it so strange after all? The professorships that sprang up tried but failed to enrich the subject with knowledge, and their demise left matters at the 1896 level.

#### 22.

One who practiced dentistry in the heyday of the heavy harness horse—the family transportation—treated ailments not catalogued in the school books. For **The Slobbering Hackney** example, I recall habitual slobbering of snowy flakes of frothy saliva by a \$2,000 pair of high steppers, all over an \$800 set of polished harness, a \$1,500 victoria, two up in breeches-boots-and-cockades, and a self-conscious lady under a fancy parasol in the latest creations—out for exhibition on the boulevards. Nineteen-forty-seven furnishes no parallel for curious eyes. Straight-laced authors and proud professors could dodge that one, but the worried coachman went to the dentist for help. If ragged molars and mouth wounds did not account for the misfortune, the two went seriously into a huddle to plan other preventive measures and, in general, succeeded.

#### 23.

Among other serious vices that in-

variably brought calls for the horse dentist was the horses' habit of extruding the **Other** tongue at work. No class of horses **Vices** was exempt. We called the vice tongue lolling, a habit horses acquire to keep the base of the tongue from crowding the pharynx while the head-neck angle is flexed too sharply. No horse that keeps its nose forward ever lolls the tongue. Floating the teeth does not cure the habit but does make a more comfortable place for the tongue. The check rein of the road horse was invented to keep the nose foremost, where it belongs. But, the whips of the heavy harness horse used curb chains and bits to get the opposite carriage of the head. Style plays funny tricks on man and beast.

## 24.

And, still another nuisance listed among the indications for dental work in the light harness horse is side-reining, that is, **Side** sistent edging to one side or the **Reining** other in motion, a vague sort of psycho-kinetic quirk that the dentist was (and perhaps still is) called upon to set right. The expert dentist doesn't expect to cure the habit with a file but renders useful service by turning attention elsewhere to the probable cause.

Moreover, during my fling at horse dentistry, I often noticed and frequently mentioned how fine saddle horses that responded obediently to every touch soon degenerated to common hacks in the hands of new owners who neglected to keep the mouth in good order.

The relation of dentistry to general practice ought not be dismissed without repeating that domestic animals do not have dental caries, the molecular decay of unknown etiology that created the dental profession, although the name caries is commonly used loosely in both secular and scientific literature on dental pathology in animals. Nor should one forget to stress the pathology of surrounding organs in broaching the value of animal dentistry, especially horse dentistry. It may seem bold to say that (1) animals do not have dental caries, (2) chronic rhinitis and sinusitis are primarily dental, (3) a nasal polypus is attached to a tooth, (4) incisors are never decayed, (5) floating the teeth is universally helpful, (6) the teeth are the least dispensable of the accessory digestive organs and are closely related to general

health and usefulness, yet there they are inviting contradiction.

Is this written with the hope of reviving interest in animal dentistry? Goodness, no! Dentistry is a dead duck. If in fifty years one is unable to put over the idea that a stinking, split molar is the climactic finish of many a toothache of who knows how long, it's time to quit trying. Nor is it encouraging to watch the evacuation of pus from the sinuses without detecting the cause is not as smart as it seems. If you flout this, it's your requiem, not mine. There's advantage in knowing when one's well licked. This is but take-it-or-leave-it history, not a text on disease. I think the veterinarians of 1947 ought to know, however, that once upon a time there was a strong movement to establish veterinary dental colleges and a national veterinary dental association.

## 25.

Leaving the McKillip for the Chicago faculty in 1901 may seem to be a too personal matter to set down in these sketches. **Enter a** It was more far-reaching than **New** that. Discord had crept into the **Regime** McKillip staff. J. M. Wright (CVC '89), a man of independent means and assistant to R. J. Withers, president of the CVC corporation, had joined the McKillip staff in 1892 on the expressed promise of becoming a partner in a practice already famous for its large earnings, and a college which he was to head had been incorporated. When eight years had passed (1900) and McKillip had yet to make good his promise, a figurative knock-down-and-drag-out quarrel was precipitated. Concurrently, I had been hoping to shed the mantle of horse dentist and take over the chair of surgery which was fused with the practice of medicine. The growing reputation as a dentist had become obnoxious—unbearable. The McKillip institution—college and practice—had grown into a giant, and its owner, cocky and independent, was purblind to the fact that it was no longer a one-man affair, and that his two head assistants and teachers had garnered a lot of friends and friendships and some national acclaim by keeping pace with the science and practice of veterinary medicine. So, when dapper Joseph Hughes offered me the chair of surgery in the 18-year-old Chicago Veterinary College, he had a new hired hand right off; and when Dr.

Wright who had quit McKillip in a huff suggested we enter into partnership, the new firm of Wright and Merillat was formed in two minutes, and the next day we had ordered new buggies and rented an excellent place to begin operations—an extension of the sales stable *de luxe* of the Arms Palace Car Company at 22nd Street and Indiana Avenue, the home of fine roadsters and poleteams.

The McKillip college—taking attendance as the sign of success—was drawing classes as large if not larger than any of the other colleges, and we regarded the practice a veritable monopoly without serious competition. We were at least sure enough of ourselves to boast of that. Some will contradict, but that was our view of the veterinary situation in Chicago at the turn of the century. The whole scheme of operation was invincible. It was service of competent veterinarians at the ring of the bell at any hour and any day. The scheme of holding a city-wide practice by charging the same fee, regardless of distance, and building up good will in every sector by systematically cultivating the influence of leading figures (horsemen, liverymen, horse dealers, physicians, politicians, preachers, priests, and nuns) was tremendously successful for many years.

I am drawing the curtain on the 1890's, the most famous decade of medical history. The McKillip practice had gross earnings of \$125,000 in 1892 and never dropped below \$50,000 during the panicky years that followed—1893-1896—when work horses were a dime a dozen and veterinarians were driven to other fields. In fact, no one was thought of as even a close competitor. Confidence, cocksureness, and superiority were passionately declared. It was a severe case of self-love plus an overload of financial success. But, panic or no panic, the horses of the McKillip practice were of the upper levels of the social set that had made too much money out of the World's Fair to be worrying about a mere depression. The wheels of the gigs rolled merrily on, the captains of industry had their poleteams and the boys their roadsters. Horse racing was booming. Except that the value of harmony in a professional staff was not measured, everything was hunky-dory. But, the tragedy of discord had crept in unseen.

But, just packing up and quitting the giant was not so simple. McKillip paid high salaries: \$2,500 a year in the 1890's was

something to tell the children, when deans got \$1,500, state veterinarians \$1,000, BAI inspectors \$1,200, and their chief \$3,000. The assistant, paid \$75 a month, was famous. In New York, J. W. Coates, the well-known assistant of the Liautard practice was a boasted \$100 man. Assistants were neophytes looking around for another billet. *Per contra*, the McKillip staff was quite permanent. That was the situation at the peak of the great enterprise. From there on, the direction was downward. So, here's a place to warn employers of professional men not to underestimate the ability and influence of their assistants. Worthy assistants are men to help achieve their ambitions. The employer not inclined to consider their personal desires had better blunder through with kennel men or hostlers as the case may be. In any event, the relation of doctor to assistant is a delicate one to handle. You can't trifle with a he-man's career and win. More often than not, the separation is not happy.

The next sketch will attempt to portray the romance of the Wright-Merillat partnership which had a long and happy career, despite the horseless streets of the urban centers and without flirting with a field of practice it was not competent to serve. Under one form of management or other, the duration was forty-five years—1901 to 1946—without deserting the edicts of ethical veterinary medicine. Veterinary medicine is such a broad field that it seems one might get by in the Gobi Desert.

### Porcine and Human Listerellosis

*Listerella* isolated from numerous necrotic lesions found in the livers of 5-day-old pigs were pathogenic for other pigs, rabbits, mice, rats, guinea pigs, and canaries. The organism was extremely virulent for the latter. The same types of lesions were produced in the experimental animals in addition to encephalitis in the rabbits and pigs. Compared with a specimen of *Listerella* from a child dead from encephalitis, the cultures were found to be identical.—*De Blicke and Jansen: Listerellose bij biggen. Tijdschr. Diergeneesk.*, 17, (1942): 573-579. *Abstr. Rev. Méd. Vét.*, 97, (Oct. 1946): 490.

Sixty million dollars is the estimated annual loss from brucellosis in American livestock.

# SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

## Panel Discussion on Artificial Insemination of Cows

*The following panel discussion on artificial insemination was presented at the Boston Session of the Association Aug. 18-22, 1946. Dr. A. G. Danks was chairman of the section.*

**MODERATOR R. C. KLUSSENDORF.**—The problems of artificial insemination have been considered at many veterinary gatherings, but such discussions have centered around the technical problems of collecting, examining, diluting, storing, shipping, and implanting the semen; or around the benefits which will accrue to the dairy farmer as a result of this procedure.

One phase has been neglected or omitted consistently—the place of the practicing veterinarian. For that reason, the formal presentation and prepared questions will be focused on that point.

Each member of the panel will be introduced and permitted to present a short opening statement. Questions and answers will then be used. Each of these doctors has written ten questions which he would like to answer. Questions from the floor will be welcome and may be directed to a particular member or to the panel as a group.

A significant point which emerged from correspondence was the high regard held by all laymen for the services of veterinarians engaged in this work, and the contrasting lack of interest shown by the practicing veterinarians who should have been in a position to take full advantage of this high regard. Almost without exception, the breeders and college organizers favored full control and active participation by veterinarians, because the plan presents dangers of unrecognized diseases, while the practicing veterinarians consistently ignored this problem and wrote only in terms of being too busy with general practice or of dreading the monotony of daily insemination work.

We will approach the position of the practicing veterinarian in this work from three angles: What has it been, what would

be the ideal, and how closely can we approach that position?

The members of this panel want to see dairy production climb, and they want the veterinarian in each community, as well as the profession collectively, to have a part in that development because it means greater prosperity among dairymen, which is always reflected by corresponding prosperity among veterinarians who guard the health of cows creating it.

I present Dr. J. D. Hamilton, of Hackensack, N. J.

**DR. J. G. HAMILTON.**—The importance of artificial insemination to the veterinary profession has reached proportions that demand the serious consideration of every practitioner. In the past eight years, the insemination of domestic animals, dairy cattle in particular, has progressed to a point equal to any of the major developments in agriculture.

The improvement of livestock by breeding is, and has been, a challenge to breeders. We veterinarians should equip ourselves with all possible knowledge, scientific and economic, which might speed up the progress.

When artificial insemination was first introduced in this country, it was not received by the veterinary profession with the interest and enthusiasm shown in dairy and animal husbandry circles. This is regrettable because the control of artificial insemination, which rightfully belongs in the hands of the veterinary profession, is being turned over to laymen. Under the accepted technique of insemination of dairy animals, the inseminator must be familiar with the palpation of the reproductive tract through the rectum. In many cases, it is but a short step from the insemination to the treating of sterility by unqualified men.

In artificial insemination, we have a valuable service to offer and, when properly executed, it can be a credit to the profession and an asset to the community. I believe the cooperative breeding organizations are of greater value to the small breeder and commercial dairyman than to the larger specialized breeder. Many of the larger herd owners, however, employ this method of breeding to great advantage for increasing the offspring of certain desirable sires. By full cooperation in

these programs, we build up the reputation of veterinary medicine.

It is of paramount importance in a breeding program to pay particular attention to the equipment and the handling of semen. The equipment must be kept clean and sterile. The artificial vagina and catheters should be kept in clean, tight cases at the office when not in use and not left in the car. Where semen is being collected at a farm, a little planning and time spent at the start to have the equipment conveniently and safely placed will save valuable time and avoid disappointment later on.

Accurate records of each breeding should be kept so as to identify the cow bred and the sire used. In purebred animals, proper forms should be filled out to insure registration of the offspring. These forms may be secured from the registry associations.

The practitioner today is more than busy and is not interested in taking on new responsibilities. In many instances, however, developing a breeding program, or taking part-time work with an already organized cooperative organization, has made it possible for a practice to support two men, which it would not do otherwise. When called to a farm to inseminate a cow, I have often been asked to perform routine surgery that would have been taken care of by the handy neighbor, or to examine an ailing animal for a condition that otherwise would have been diagnosed and prescribed for by the local druggist. Through such contact, greater prestige can be built up among one's clients, much undesirable competition eliminated, and a greater service rendered.

MODERATOR KLUSSENDORF.—Thank you Dr. Hamilton. I next introduce Dr. J. A. Henderson, of Urbana, Ill.

DR. J. A. HENDERSON.—I think it is time that we, as veterinarians, do some serious thinking about our relationship to the program in artificial insemination developing in this country. We are losing out in an important field. To reverse the trend will not be an easy task. It is easy to pass it off as due to a temporary shortage of veterinarians, but I doubt if it is that simple.

It must be remembered that leadership in artificial insemination in this country has not come from the veterinary profession to the same extent as in some European countries. Here, little of the basic research was done by veterinarians. To learn the latest technical developments, one must go outside the profession. In addition, we did not supply the organizational impetus which made it possible to inseminate 500,000 cows this year for breeding associations. Nevertheless, I am convinced that the whole program would have been on firmer ground had it been possible to link up insemination more closely with herd health through the employment of veterinarians.

Most of the early associations employed veterinarians as managers whose duties were limited to the administration of the association and the insemination of cows. That seems to be the simplest way to handle it, but it just doesn't work. Only the occasional veterinarian will remain in such a position for

more than a year or so, and no breeding program can operate for long on that basis. An alternative is to have the association veterinarian treat sterility in cooperating herds. This adds interest but it takes work from practitioners and, for that reason, has not proved generally acceptable.

The possibility remains of arranging a system whereby each practitioner does the inseminations in his own particular area. If it can be made to work, this appears to be the ideal system, but there are several reasons why it has failed. Some practitioners have undertaken the work without learning enough about the technical aspects. Some have failed to realize that insemination takes a lot of time; therefore when something has to be neglected, it is usually the insemination. Some have fallen down on keeping records, and others have simply refused to have anything to do with it. On the other hand, the record is not one of complete failure. A number of practitioners have demonstrated that it is possible to run both a successful practice and a successful insemination circuit. I am sure that many more could do it with benefit to their clients and themselves.

MODERATOR KLUSSENDORF.—Thank you, Dr. Henderson. And now I present Dr. John C. Range, of Celina, Ohio.

DR. JOHN C. RANGE.—A large percentage of the artificial insemination of dairy cattle being conducted today is performed under the direction of cooperative associations owned and directed by the herd owners. The movement is growing rapidly, and as of Jan. 1, 1946, there were over one half million cattle in the program. In time, it will greatly influence the quality of dairy cattle on our farms.

From the standpoint of supervising artificial insemination work, the practicing veterinarian has two opportunities to help. In solving breeding problems, he has a responsibility to his client to render the best service of which he is capable. He also may participate directly by inseminating cows.

Whether the practitioner is able to handle insemination depends on him and his practice. I have seen practitioners who have incorporated it to the advantage of everyone. Others have failed to make the combination succeed. Most veterinarians will find this field a tiresome routine after a few months. However, he who is genuinely interested in good dairy cattle and their breeding will find it interesting.

The close relationship between artificial insemination and reproductive difficulties should offer profitable experience to the veterinarian. Since there is no provision to compensate for the extra time required to examine the cows, the associations and the veterinary inseminator usually discourage such examination; hence, the chief value of a veterinary inseminator is wasted.

I believe the veterinarian can be of most assistance in the supervision of the technique, from the collection of semen to its placement in the reproductive tract. As cooperative breeding associations grow, the need for adequate supervision increases. Many breeders are re-

sorting to artificial insemination in their own herds. If this practice isn't carefully carried out, the owner may reap none of the advantages and all of the disadvantages of artificial insemination. The herd veterinarian should be competent to give adequate advice.

Artificial insemination is developing rapidly, and it needs and will continue to need the help of the veterinary profession. Besides, it is an opportunity for the veterinary profession to increase the value of its services to agriculture.

MODERATOR KLUSSENDORF.—With an opening statement by each member of the panel, we are ready to proceed. I hope that you will feel free to ask questions. We would like to answer the questions which have puzzled you. We will reach as many angles of general as well as of specific interest as possible.

Q.—Dr. Henderson, in what way do you think participation in this type of program can benefit the private practitioner?

DR. HENDERSON.—First of all, it puts a veterinarian on many farms where the owner is barely conscious of veterinary service. Also it causes him to visit other farms more frequently and, while there, many small jobs are presented that would not justify a special trip. Moreover, it gives the veterinarian a closer insight into reproductive problems and puts him in a position to treat them rationally. It takes care of the question of breeding records—the veterinarian is in possession of the complete and correct record on each cow.

Q.—Dr. Range, when more veterinarians are available, will the breeding associations use them exclusively?

DR. RANGE.—Probably not. The agricultural college graduates have done an excellent job, and those properly trained have been able to maintain a conception rate equal to that of the veterinarian. At this time, nearly all associations hire an inseminator for his individual worth and not his educational background.

Q.—What advice would you offer a practitioner starting a breeding program, Dr. Hamilton?

DR. HAMILTON.—If the practitioner has never done inseminating, I suggest that he take a little time off and go to the nearest well-organized cooperative unit and study the technique. If possible, inseminate a few cows under the supervision of a trained man and take particular note as to how the semen is collected and handled for storing and transporting to farms. A few days spent traveling in a well-organized unit are well worth the time and expense involved.

Q.—Can a veterinarian ethically refuse to render this service, Dr. Henderson?

DR. HENDERSON.—No, because the issuance of a license to him implies that he will render a complete veterinary service to his community. If need be, he should employ an assistant.

Q.—Dr. Range, do you believe there will be an increasing demand for this work?

DR. RANGE.—It is still in its infancy and should grow even more rapidly than it has. A large part of the dairy territory of this country does not yet have service available, but it is making rapid strides. In the early days of

artificial insemination associations, inadequate financing and poor results were the downfall of many groups. Today, those difficulties have been largely but not entirely overcome.

Q.—Dr. Hamilton, what about the practitioner who says, "I haven't time."?

DR. HAMILTON.—Until he realizes the importance of finding time or of employing an assistant who will have time, there is little to be gained from him.

MODERATOR KLUSSENDORF.—It is well known that the progressive veterinarian must keep himself informed on many subjects, because the progressive breeder can ask questions that are embarrassing to the out-of-date practitioner. When we stand still we either get run over or else the world goes by us, but if we keep on our toes the next step follows inevitably. As soon as a veterinarian has developed an art he begins to use it, and soon that particular art is being demanded by certain of the clients who appreciate its value.

Q.—Before we get too far off this subject, in a locality where a cooperative unit is already functioning, can the practitioner compete, Dr. Hamilton?

DR. HAMILTON.—Yes, and we will later bring out the several ways in which he may do so.

Q.—Dr. Hamilton, what position do you believe the veterinarian should take?

DR. HAMILTON.—He may refuse to acquaint himself with it. He may inseminate an occasional cow for a client who has semen shipped in by a breeder, usually from some outstanding sire. He may inseminate one or more herds privately, using semen from bulls in the herd. Or he may train the herdsman, and only supervise. He may purchase semen and inseminate cows in his practice territory. He may acquire a bull stud and make a business of insemination.

Q.—How can the practicing veterinarian best work into the program, Dr. Range?

DR. RANGE.—Probably veterinarians will be able to help most by making a study of the breeding difficulties of the individual herds.

Q.—Dr. Henderson, should the practitioner who refuses to render this service expect encroachment on his practice?

DR. HENDERSON.—Yes, there is almost sure to be some encroachment.

Q.—What types of encroachment may be expected, Dr. Range?

DR. RANGE.—Pregnancy diagnosis, some treatment of sterility, and probably other minor veterinary problems which the inseminator cannot gracefully avoid handling.

Q.—Do dairymen prefer to have a veterinarian inseminate their cows, Dr. Hamilton?

DR. HAMILTON.—Invariably, yes. They realize that they get more and better service from a veterinarian than from a lay inseminator.

Q.—It has been stated that instrumental intervention in the reproductive tract is major surgical procedure and should be practiced only by a veterinarian. Dr. Henderson, do you agree with this view?

DR. HENDERSON.—It is undoubtedly true that this is a major surgical procedure, but not enough veterinarians are interested, so laymen do a great deal of it.

Q.—Dr. Ramge, what group of veterinarians are most likely to be interested in inseminating cows?

DR. RAMGE.—In our state, recent graduates who are developing a practice in a community. The recent graduate is able to meet many farmers in a short time while making insemination calls. One veterinarian told me that the majority of the calls he made the first several months were to farms he had visited in the artificial insemination work.

Q.—When a veterinarian enters a new community, Dr. Ramge, how does it help him to engage in the work of artificial insemination?

DR. RAMGE.—By providing work while the practice is building. By getting him favorably established in many dairy barns. By widening the circle of his acquaintances in the community.

Q.—Dr. Hamilton, do you believe that a newly graduated veterinarian spends his time wisely when he engages in work of this type?

DR. HAMILTON.—I have never regretted the five years spent with the breeding association in New Jersey. It affords the chance for the graduate to build confidence in himself, trains him in meeting the public and selling himself. In no other field do we have the opportunity to examine the number of genital tracts, both normal and abnormal, that we do in this type of work. The experience in diagnosing pregnancy at an early stage alone is worth the time spent.

Q.—Do you believe that a recent graduate is well equipped and trained to perform the task of artificial insemination, Dr. Henderson?

DR. HENDERSON.—More so than any other person. He has the proper background, but has not had enough experience to proceed on his own. He needs a few weeks of work with a good man in the field.

MODERATOR KLUSSENDORF.—That brings us to a point where we confront a much larger problem. Is it the purpose and duty of a veterinary college to produce specialists? No graduate comes out fully equipped to do a complete job in any field of veterinary medicine, because the faculties at our veterinary colleges have continued to believe it to be their duty to provide a basis and a sound foundation in all phases of the veterinary field, but that specialization must come after graduation. If a student has been well trained in the basic sciences, and has then learned to apply this basic scientific knowledge to his everyday problems, he will soon become a specialist in those particular directions in which he exerts his capabilities most fully. If he exerts none of his innate ability, he remains a nonentity.

As a matter of basic information, the veterinarian knows about the reproductive organs. The lay inseminator, on the other hand, does not have this information so firmly established. Do you believe that this lack of knowledge may lead to insemination of cows already pregnant, Dr. Ramge?

DR. RAMGE.—Yes, I know of cases where this has happened.

Q.—Dr. Ramge, would this be due to the fact that the owner had not selected the right cow as being the one needing service?

DR. RAMGE.—Partly that, and partly failure to make a careful examination of the reproductive organs before making the insemination.

Q.—Would such insemination probably result in abortion?

DR. RAMGE.—I know of one such case.

Q.—In your experience, is it likely that such a mishap is a serious drawback to the use of lay inseminators, Dr. Henderson?

DR. HENDERSON.—It certainly would have a detrimental effect, but does not happen with sufficient frequency to be a serious factor.

Q.—It is apparent from the discussion that there are not enough veterinarians to perform all of the insemination work. When lay inseminators are used, Dr. Hamilton, how and by whom should they be trained?

DR. HAMILTON.—Probably at a college and by a veterinarian first, but finally by an inseminator working with them in the field.

Q.—Should they be licensed, and by whom?

DR. HAMILTON.—I see no way to license them, nor any need for a license.

Q.—Dr. Henderson, can lay and veterinary inseminators overlap in a territory?

DR. HENDERSON.—Where I have seen this tried, it did not work out well. All of the dairymen wanted the veterinarian and felt that others were getting more and better service when they failed to get him.

Q.—Do you feel that the problem of using lay inseminators could be handled more effectively if they were employed by the local practitioner? Would that give better control of the amount of veterinary service rendered by the layman, Dr. Ramge?

DR. RAMGE.—No, I'm afraid not. The veterinarian would then be held responsible for the shortcomings of the insemination program, and would probably suffer the loss of some of his clients.

Q.—Do you agree, Dr. Henderson? Would it be feasible for the veterinarian to assume responsibility for the insemination, then employ a layman trained, licensed, and acceptable to the breeding ring to do the actual work of insemination?

DR. HENDERSON.—I agree with Dr. Ramge. This probably would not be a favorable arrangement for the veterinarian. It has more disadvantages than advantages.

MODERATOR KLUSSENDORF.—There seem to be objections to keeping the local practitioner in touch with reproductive problems in this way, which would relieve him of the monotony of a great deal of inseminating. There is a report from one association where a veterinarian and a layman work a given territory together, with the understanding that the veterinarian will make the third insemination whenever that is necessary, and will also make other inseminations that involve herds or individual cows that have a history of infertility or breeding irregularity in the past.

On the basis of your wide experience, do you believe that an arrangement of this type will work with a private practitioner? Will it keep him interested in the breeding efficiency of the herds in his practice area? And if he employs a lay inseminator, will he have better

control of what this man is doing so that he can keep him from encroaching on the practice of veterinary medicine, Dr. Hamilton?

DR. HAMILTON.—I must agree with the other panel members; I believe that if used widely it would develop more objections than commendations.

Q.—We sometimes hear that small herds have more trouble and a lower rate of conception than do the larger herds with artificial insemination. Do you find it so, Dr. Henderson?

DR. HENDERSON.—No, the small herds uniformly have less breeding trouble than the larger herds.

Q.—Do you agree, Dr. Ramge?

DR. RAMGE.—Yes.

Q.—And you, Dr. Hamilton?

DR. HAMILTON.—That has been true in the communities where I have worked.

Q.—Related to this problem is the further story that 2-year-old or first calf heifers present more problem cases than do old cows? What has been your experience in this connection?

DR. HAMILTON.—The 2-year-old heifers do, consistently, give us more trouble than do the 3-, 4-, and 5-year-old cows, but no more than cows over 6 years.

DR. HENDERSON.—That checks with my experience.

DR. RAMGE.—And mine.

Q.—Do you believe that the use of a mature bull, and especially one with sexual experience in a large herd, is a factor in such trouble?

DR. RAMGE.—It may be, but I hadn't observed that in particular.

DR. HENDERSON.—In some instances that might explain it, in others not.

DR. HAMILTON.—I am not satisfied in my own mind that this is the correct explanation, but just at the moment there seems to be no better one.

MODERATOR KLUSSENDORF.—Fifteen years ago it was recognized that in certain herds there was a great deal of trouble when heifers were bred to mature sires. When we established the procedure of assigning a virgin bull to each new group of virgin heifers this trouble seemed to subside markedly. After spending a portion of a year with the herd as a member of the milking unit each heifer developed enough tolerance to be bred successfully to the mature sire.

For herds in which this did not work, we merely postponed the breeding trouble one year. Notably, this occurred in the herds that were infected with *Trichomonas foetus*.

And that brings us to another point. Before a bull is put into service in a breeding ring, Dr. Ramge, what diseases should he be examined for and found to be free?

DR. RAMGE.—The dairymen will demand bulls free from brucellosis. Trichomoniasis in the light of present knowledge is a more potent cause of trouble. Any abnormality that could possibly be an inherited characteristic should eliminate a sire from further consideration.

Q.—Dr. Henderson, when a practitioner de-

cides to operate a breeding service, do you advise he purchase semen or acquire his own stud of bulls?

DR. HENDERSON.—If a reliable source of semen is available, I would strongly advise against trying to run his own bull stud. In addition to the capital necessary, most of the grief in connection with artificial insemination has to do with bull management. When semen is supplied by a reliable group, one is reasonably certain of satisfactory quality. Moreover, in order that purebred calves may be registered, it is necessary that all operations be approved by the Purebred Dairy Cattle Association and such approval will usually be a relatively simple matter if the semen is obtained from a group already approved. If a practitioner contemplates setting up a circuit, he should consult his state dairy extension specialist on this question of approval; it may save a lot of trouble later.

Q.—When purchasing semen, what would be a safe distance or a safe time to have the semen in transport, Dr. Hamilton?

DR. HAMILTON.—This depends largely on the transportation facilities. The best results may be expected where semen is on the way only a few hours. To date, we have not found a satisfactory method of shipping semen any great distance without exposing it to great temperature variation. When semen is in transit for twenty-four hours or more, the results are anything but encouraging.

Q.—Dr. Ramge, what are some of the problems a veterinarian encounters in setting up his own bull stud?

DR. RAMGE.—The main drawbacks are (1) several sires are necessary for each breed to insure a fresh supply of semen and a large volume of inseminations must be made to handle the overhead; (2) few veterinarians are in a position to select the bulls that will sire superior daughters.

Q.—You said it would be better for a practitioner to purchase semen than to establish his own stud. Let's go one step further. If he can purchase semen reasonably near by, should the practitioner engage in insemination work, Dr. Henderson?

DR. HENDERSON.—I am inclined to answer yes with reservations. He must know what he is getting into. If he is able to add an assistant for each 1,000 cows to be inseminated, to handle every call on the day it is received, and to take care of the necessary bookkeeping, it should be a worthwhile sideline. But, unless he can do these things he should leave it alone. It is doubtful if a man practicing by himself should ever undertake such an enterprise.

Q.—How does the conception rate of artificial insemination in a herd compare with that of natural mating, Dr. Hamilton?

DR. HAMILTON.—In some herds, there is little choice; one is just about as satisfactory as the other. Where the insemination is conducted properly with all precautions taken in the handling of the semen, and the sires used are equal in all respects, there is no reason why as good or better results should not be achieved.

Q.—Dr. Ramge, does the amount of mucous

discharge at the time of mating seem to be of any value in predicting the success of a service?

DR. RAMGE.—I believe the amount of mucus has no effect on conception and that it, therefore, has no value in predicting successful service.

Q.—Dr. Henderson, does the frequency with which a bull is used influence the rate of conception, and how often may a bull be used and still maintain optimum fertility?

DR. HENDERSON.—Bulls show considerable variation in this respect. Some breeding associations use their bulls only once in about ten days. I believe that fertility is promoted by more frequent use. On the other hand, bulls can be overworked. Collecting semen every four or five days is about right for the average mature bull. Longer rest periods might be beneficial for bulls over 6 or under 3 years of age.

Q.—What kind of bulls are breeding rings attempting to procure? In view of what has been said, and the fact that there are many grade heifers of unknown and nondescript parentage which could surely be improved by using a young bull of good pedigree but not of proved prepotency, do you feel that there is any place for such unproved bulls in breeding rings, Dr. Ramge?

DR. RAMGE.—Breeding associations are attempting to obtain sires with several daughters in production that are producing at a high rate and show indications of being superior to their dams in both type and production. Since these bulls are scarce, some younger bulls of excellent parentage are used. Even then, they are considered a gamble.

DR. HAMILTON.—I believe that the greatest good can be accomplished by using the best bulls available and that proved sires should be used whenever possible.

DR. HENDERSON.—Proved bulls should be used whenever they are available.

MODERATOR KLUSSENDORF.—It seems to me that regular reproduction from these heifers, even if the sires used are not yet proved, is superior to unsuccessful use of proved sires. Somebody must prove sires and, logically, the breeding rings should bear a part of that responsibility. Moreover, they are in a position to prove a bull quickly, to do it without ever having him breed naturally—thus avoiding the transfer of any genital infection, and they do this in such a way that no breeder will lose all of one or two calf crops by making a poor selection as will happen occasionally.

Getting back again to our disease problems, can insemination be considered a cure for infertility, Dr. Hamilton?

DR. HAMILTON.—Artificial insemination is not a treatment for sterility. However, certain types of sterility may be controlled by it. Careful examinations of animals at the time of insemination will disclose causes of sterility in the early stages when response to treatment is more rapid, and the spread of infections is controlled.

Q.—Have you encountered bulls that will not use an artificial vagina, Dr. Henderson?

DR. HENDERSON.—Yes, but not frequently.

Often changes in temperature or pressure will correct the trouble. A more frequent difficulty is slowness or unwillingness to serve. Fertility may not be affected. Some bulls start all right but just gradually get slower until they refuse service altogether. Changing the cow will often correct it temporarily and there are other tricks which sometimes work, but the impotence is a baffling problem. The cause appears to be psychological.

Q.—Dr. Ramge, what are the prospects of insemination being used more widely on other classes of animals in the future?

DR. RAMGE.—Not very great. Turkey breeders have used it to increase the percentage of fertile eggs. It can be done in all farm animals but it hasn't been practical because the cost is too high.

DR. HAMILTON.—The present trend is to centralize the dairy cattle field?

DR. HAMILTON.—The present trend is to centralize stud farms which will supply larger areas with semen. The practitioner would then be called upon to take over insemination in his locality. Recently, a program of this nature was organized in New Jersey where a county, purchasing semen from one of the near-by co-operative units, engaged two practitioners to do the inseminating.

Q.—What do you consider the most important advance in technique recently, Dr. Henderson?

DR. HENDERSON.—Undoubtedly, the development of the egg-yolk dilutor by Phillips. Before egg yolk was used, dilutors simply added to the bulk of the ejaculate and it was unwise to use samples over twenty-four hours old. If that were still true, we would not have seen anything like the development which has occurred.

Q.—Dr. Henderson, is there any single test which will foretell the fertility of a given sample of semen?

DR. HENDERSON.—No, it is still necessary to judge a sample by several criteria and then to be careful of what you say. But the methylene blue reduction time is probably the best single test we have. It gives a fairly good measure of concentration and motility. Samples with a satisfactory reduction time seldom fail to give a satisfactory conception rate. It should be used along with microscopic examination rather than in lieu of it.

Q.—What development has taken place in England to keep the veterinarian, especially the private practitioner, in the insemination field, Dr. Henderson?

DR. HENDERSON.—It is required by law that the operation of an artificial insemination center be under the effective control of a veterinary surgeon. This does not mean that veterinarians do all the inseminating. In fact, most of it is done by lay inseminators. But in each center, the man in charge is a veterinarian, and he is responsible for the technical operation and business administration of the center. With one or two exceptions, they are owned by the producers. Two or three are local co-operatives, but the majority are operated by the Milk Marketing Board which is a nation-wide producers' organization. However,

there is strict government control of the whole program; for instance, all bulls must be approved by Ministry of Agriculture inspectors, as must the veterinarians and technicians engaged.

Q.—Dr. Ramge, what part have the agricultural colleges and the county agents played in organizing breeding rings in this country?

DR. RAMGE.—The majority of associations were organized with the active help of these men. The research has been handled largely by the agricultural colleges and experiment stations. Some states have given financial assistance to associations, usually for research. Technically, these institutions act only in an advisory capacity but, in practice, they are usually responsible for the policies of the association.

Q.—In using egg-yolk dilutor, what do you consider the optimum dilution for bull sperm? The maximum dilution, Dr. Henderson?

DR. HENDERSON.—If semen is to be preserved more than three or four days it is preferable to keep the dilution down to 1 to 4 or 1 to 5 during the storage period. If the semen is to be used within three or four days, much higher dilutions can be used. Experiments have shown that when satisfactory samples are used, diluting 1 to 50 has no adverse effect on fertility. It may be that higher dilutions can be used.

Q.—Dr. Henderson, in an area served by a lay inseminator under the veterinarian's supervision, and in which a full-time salaried veterinarian carries on all sterility work without direct expense to the herd owner, what should be a private practitioner's attitude and position?

DR. HENDERSON.—In such a case, the private practitioner does best to make the best of it. He can get to know the man who is doing the work, and very often they will work together on individual cases.

I do think it will not do the private practitioner much good to buck the program. It would probably be best to go along with it.

Q.—Dr. Hamilton, assuming an average of 20 to 30 per cent of failures in settling cows, how can a private practitioner keep his client satisfied over a longer period—not having the alibi of treating a visibly sick animal?

DR. HAMILTON.—You mean where the conception rate is 20 to 30 per cent failures? Well, he can't, although 70 or 80 per cent conception for the first service is good. But if he is going to have lower than 50 per cent on first service or lower than 70 per cent on three services, he is going to run into trouble in keeping his client satisfied. He should look for a basic trouble which may be functional, try to correct the underlying cause before starting to inseminate, and keep going by treating the basic cause.

Q.—Dr. Ramge, is there any legislation at the present time to prevent lay inseminators from doing sterility work?

DR. RAMGE.—I suppose that would be a matter for state legislation. I know of no legislation having that object in view. The general practice laws, I imagine, would take care of that.

DR. HENDERSON.—I do not know of any such legislation.

DR. HAMILTON.—There is no such legislation known to me.

Q.—Should the practitioner attempt to manage the entire artificial breeding organization unit or should he confine his efforts to the actual work of insemination, Dr. Henderson?

DR. HENDERSON.—If it is possible to confine his efforts to the insemination and the treatment of infertile cows, I think he should do so. As I mentioned before, if he can purchase semen from a reliable source and do the inseminating work in his own community and among his own clients, I think it is a good thing; but if he has to run his own bull stud and operate it, that would be a big undertaking I would advise him to avoid.

Q.—Dr. Hamilton, how would you go about interesting a cooperative in veterinary supervision?

DR. HAMILTON.—From the standpoint of the service the veterinarian can render in pregnancy diagnosis and treatment of sterility, he has the advantage over the layman. So far as inseminating goes, there is no doubt that laymen can be taught to do the actual work and possibly do it as well as the veterinarian. But, I think the organizations can be made to realize that, in the treatment of sterility and examinations for pregnancy at an early stage, it is better to have a veterinarian.

Q.—Dr. Ramge, how would you budget the time for insemination along with a busy general practice?

DR. RAMGE.—I have not had any experience along that line, but I think it could perhaps be worked out fairly well. The insemination ring has a deadline when calls must be in, usually 9:00 or 9:30 a.m. The practitioner can often clear away many of his practice calls by that time, and then start out on the insemination work, and perhaps pick up other calls on the way. Unless he has too much artificial insemination to do, he will be back fairly early and can do work that has come in.

Q.—During the discussion, it was mentioned that for every 1,000 cows to be inseminated there should be an additional assistant. That would help in budgeting, wouldn't it, Dr. Ramge?

DR. RAMGE.—Yes, if the veterinarian is doing a good practice. I don't imagine he would want to do over 1,000 first services in a year.

Q.—Dr. Henderson, how would you recommend forming a service that would pay a fair return, present fees seemingly being inadequate?

DR. HENDERSON.—I have taken the position that the veterinarian must purchase semen or be paid by the local cooperative to do the work in his local area, and he must negotiate with the local group in regard to the fee.

I don't know what a fair fee is, as that would depend on the concentration of cows, the number of cows he has to treat, and the distance he has to travel. If a man did not have to go more than 8 or 9 miles, he might be able to do 1,000 cows a year. In some areas, \$3.00 a new cow would be fair, and he would do the

rest for nothing. I think some men could do that if they did not have to go more than 7 or 8 miles and had enough cows to treat. But most of these groups are so organized that a man has to go 20 miles to some of the cows, and if he is to go that distance, I don't know what a fair fee would be. I don't see how it can be operated by a practitioner if he must go more than 10 miles per visit.

Q.—How are you going to induce veterinarians to compete with lay inseminators at \$3.00 per breeding, with two services free, if conception does not occur on the first service; that is, if he uses his own car at his own expense? The lay inseminators are usually employed by the cooperative, are they not? Does that include the operation of the car, or are they compensated additionally above the \$3.00 per head, Dr. Henderson?

DR. HENDERSON.—I don't know. In some states, they could perhaps do it on that basis. The New Jersey No. 1 cooperative employs veterinarians and pays them a salary, and they estimate that their breeding costs are about \$2.80 a cow, plus \$1,000 a year traveling expenses. If a practitioner cannot come somewhere near that figure he is not going to get the work to do. That is about the size of it.

DR. HAMILTON, do you believe that most farmers will pay a fee comparable to a professional call for breeding a cow—that is, in the artificial insemination program?

DR. HAMILTON.—No, I don't think they would pay a fee comparable to that for a call for this reason: If they have 20 or 30 cows to inseminate, and if the distance is over 10 miles, as Dr. Henderson says, the fee must be considerably higher. But you cannot go as high as you would charge for other professional calls.

Q.—Have you noticed any particular places where the practitioner has developed sterility work as a result of artificial insemination done by laymen, Dr. Ramge?

DR. RAMGE.—To a limited extent, the whole association I happen to work for is set up pretty much on that basis. Our men, who are lay technicians almost entirely, are instructed to suggest that the local practitioner be called in when they come to a problem cow or a problem herd. On a good many of these farms, the local practitioner has never made such a call, and we do get quite a bit of that done. The difficulty is that there are some instances in which the practitioner is not interested in that kind of work or is not able to render the service.

Q.—Dr. Henderson, getting back again to the question of fees, what do you believe would be a fair fee for inseminating a cow, including two free services after the original?

DR. HENDERSON.—Is this the fee the farmer pays or the veterinarian gets?

Q.—The fee the veterinarian gets.

DR. HENDERSON.—And he is not having to pay for the semen?

MODERATOR KLUSSENDORF.—Presumably not, but he must operate his own car at his own expense.

DR. HENDERSON.—As I have said, it depends on how far he has to go. If he can limit his territory to 7 or 8 miles, I think he can do these

cows at possibly \$3.00, and make a little money if he does it at \$3.50. He can do two repeat services, if necessary, on that.

Q.—On that basis you are assuming he gets the semen free, Dr. Henderson?

DR. HENDERSON.—Yes.

Q.—In case he must purchase his semen, how much in addition would that be? How much more would it cost the cow owner above the \$3.00 basic fee, Dr. Henderson?

DR. HENDERSON.—Usually, the owners pay anywhere from \$5.00 to \$8.00. The driving distance to association cows is usually great, but if the calls are concentrated they can cut that fee down considerably.

Q.—Dr. Hamilton, what is considered a good percentage of conceptions on the first service?

DR. HAMILTON.—I think you will be able to get 60 per cent on a first service. If so, you will be doing a good job. The average is 50 to 60 per cent.

Q.—How long will a bull remain active in an artificial insemination ring, Dr. Ramge?

DR. RAMGE.—I don't believe we have been engaged in artificial insemination long enough to know that. We have some 10-, 12-, and 14-year-old bulls that are still going strong. I feel they should last just as long in an artificial insemination ring as in natural service if properly handled, because they will get better care than on most farms. Age has not meant a lot with us yet. Of course, most of the bulls have gone to market by the time they are 10 years old.

MODERATOR KLUSSENDORF.—It would seem, in that event, that the management to which the bull is subjected, and the degree of efficiency of the supervision exercised over him, and also the number of services per week, would be determining factors. It is something you cannot answer with a general statement on time. It varies from bull to bull.

Q.—Can a technician produce cervicitis in passing an inseminating tube through a tight cervix, Dr. Henderson?

DR. HENDERSON.—Yes, I know one technician who passed it not only through the cervix but through the wall of the uterus and produced a dead cow, which is more than producing cervicitis. If one uses a rounded insemination tube and reasonable care, there is not much danger.

Q.—Getting back again to breeding percentage, what percentage might one expect over a considerable number of cows, Dr. Hamilton?

DR. HAMILTON.—That largely depends on location. In New Jersey, our cows are largely imported. Up to the past few years, very few dairymen raised replacements; they bought them, and were getting problem cows. In a community where cows are imported and moved about, if you get 50 to 60 per cent on first service your work is satisfactory. In other localities, where replacements have been home raised and there is no importation of cattle, I think a conception rate up to as high as 70 or 75 per cent can be expected on first service and, in some cases, even higher than that. I know of cases where the rate was 80 per cent, but that is rare. The whole thing depends on the custom in the locality.

**MODERATOR KLUSSENDORF.**—Now for a quick summary. Dr. Ramge, can you tell us briefly why dairymen are using artificial insemination?

**DR. RAMGE.**—Most dairymen use this service as a method of improving the production of their herds. However, it is used for many other reasons. The danger of a bull, the spreading of diseases, and the cost of keeping a herd sire are the most important.

**Q.**—Dr. Hamilton, how may a more desirable position in this field be attained by the veterinary profession?

**DR. HAMILTON.**—By a more active participation in the program by the veterinary colleges, both in regard to instruction and research. Very little research work in this field has been done by veterinary schools. Also, by the full cooperation of every practitioner.

**Q.**—How can a general practitioner engage in and profit from such activity, Dr. Henderson?

**DR. HENDERSON.**—By closer contact with herds and herd owners. If a veterinarian is handling the breeding program of a herd, he will undoubtedly be responsible for the herd's health.

The veterinarian should have an interest in the work, keep accurate records, and give much thought to aseptic equipment and the handling of semen. A trustworthy source of semen should be available, and the territory covered should not be too extensive but, rather, as concentrated as possible. Also, the veterinarian should have a sympathetic understanding of the dairyman's breeding problems.

**MODERATOR KLUSSENDORF.**—We have tried to give you a review of some phases of the problem of artificial insemination, and have stressed the position which the practicing veterinarian can and should occupy in such a program. We are quite well agreed that veterinary supervision is essential and that, because invasion of the reproductive tract really constitutes a major surgical procedure, veterinary control should go farther than handling the bulls and preparing the semen for shipment. However, since there are not enough veterinarians to carry the work to its ideal conclusion, we have tried to emphasize the ways in which the local practitioner can use his time and apply his basic training to the best advantage and still retain an interest in, and an influence upon, the program to the end that breeding efficiency among the herds in his practice area may remain at a high level.

To do this, an interaction of veterinarian and layman appears to be necessary, and I hope that a plan can be worked out whereby the local practitioner will assume responsibility for the insemination work in his practice area. If he could then employ a lay inseminator who would work from his office, records on problem herds would be available to him during the odd moments between other calls. He could service the cows that are being inseminated for the third time and the herds having an unusual amount of breeding trouble.

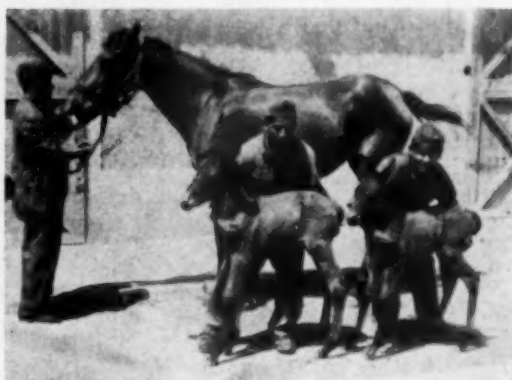
I want to thank the members of the panel for the time and study they have devoted to

the problem, as well as the generosity with which they have shared their information with us. I also want to thank the audience for helping to keep the program going with your questions, and for your close attention.

**CHAIRMAN DANKS.**—I want to thank Moderator Klussendorf and the speakers who have contributed to this program.

### Twin Mules in Peru

A half-breed, 5 1/2-year-old mare, 15 hands high, gave birth to twin mules, a filly and a colt, at the Peruvian Army Remount Depot on Oct. 9, 1946. The period of gestation was three hundred and twenty-



The photograph was taken when the colts were 8 hours old. The filly is at the left.

two days. These are the first twins to survive at the Remount Depot in the past four years.

The weight of the filly at birth was 61.6 lb., height 33 in., and girth 28 1/2 in. The colt at birth weighed 48.4 lb., height 31 in., and girth 26 in. Both are doing well at this writing (Jan. 16, 1947).—*Lt. Col. Russell McNellis, U. S. Military Mission, American Embassy, Lima, Peru.*

Probably the greatest recent advance in local anesthesia is paravertebral nerve block, introduced into veterinary science by Farquharson of America.—*Vet. Rec., Nov. 30, 1946.*

### Corrections

In the January, 1947 (pp. 14-19), issue of the JOURNAL, the following corrections should be made in the article "Bone Pinning in Fractures of Small Animals," by Dr. E. A. Ehmer: page 15, line 22 (column 2), should read "... epiphyseal fracture of the distal end ..." instead of "... symphyseal fracture of the distal end ..."; page 18, line 49 (column 2), should read "... nor any osteomyelitis." instead of "... nor any poliomyelitis."

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# CLINICAL DATA

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## Clinical Notes

Physicians of the UNRRA obtained no response from the use of streptomycin in Asiatic cholera.

An example of solid immunity induced by vaccination is the resistance of vaccinated subjects to intracerebral injections of equine encephalomyelitis virus—eastern, western, and Venezuelan.

The Naval Medical Research Institute reports an insecticide, NMRI 448, which kills insects on contact and repels for as long as two weeks, but is not irritant to the skin. It can be used easily and safely.—*Sci. N. L., Aug. 24, 1946.*

Of the 642 drugs in National Formulary VIII, 36.5 per cent were rated as "useful drugs" in the *Bulletin of the National Formulary Committee*; 22.4 per cent of questionable value, 7.5 per cent of no demonstrable value, 8.7 per cent of use to be discouraged, and 24 per cent "not objectionable."

A medicinal dose of phenothiazine given to sheep about to be turned to pasture in the spring, access to phenothiazinized salt lick during the summer, and another medicinal dose when the flock is brought in for winter feeding, is said to have solved the major worm-parasite problems of the sheep grower.

**Atabrine.**—The synthetic antipaludian which has been found equal to, if not better than, quinine as a suppressive agent in human malaria has given interesting results in the treatment of coccidiosis of chicks, dogs, calves, rabbits, and pigeons. The dose recommended is 0.01 Gm. per 1 kg. of live weight daily for four or five days. Atabrine was used by French veterinarians during the war and their reports have been confirmed by controlled laboratory experiments, according to published information.

Phlebotomy and autohemotherapy are indicated in laminitis, along with exercise on grass every hour.—*Dr. J. C. Carey, D.V.M.*

When cows with ketosis do not respond to intravenous injections of calcium gluconate, be on the lookout for a complicating albuminuria.

Intocostrin (Squibb), a biologically assayed extract of curare, removes the irregular action of the crude drug once commonly used in veterinary practice.

The gamma isomer of benzene hexachloride is more toxic to some insects than is DDT, and will replace it for certain uses when it has been tested more widely.—*Agric. Rec. Admin.*

We see more milk fever cases in moist, humid weather, and they are more severe. This condition is neither a fever nor a paralysis, but a coma.—*S. L. Stewart, Olathe, Kans.*

The anthelmintic of choice for pigs is 22 minims of oil of chenopodium in 1 oz. castor oil and 1 oz. linseed oil, administered by the Steenerson method with an 8-in. stiff tube on a 2-oz. dose syringe.—*Dr. H. R. Hornbaker.*

The cilia of the respiratory mucous membrane beat at the rate of approximately 200 per minute. Those of the nasal passages move the mucous blanket backward (downward) and those below the pharynx forward (upward).

**Erythrin, New Antibiotic Agent.**—Erythrin, a new antibiotic agent obtained from the red blood cells of rabbits and other laboratory animals, is reported to be giving good results in various diseases, especially diphtheria, at clinics in Russia. This first antibiotic to be extracted from animals was discovered by Dr. L. A. Silber of Moscow.—*Sci. News Letter, Nov. 9, 1946.*

## Brucellosis in Swine. VII. Field Control Experiments

L. M. HUTCHINGS, B.S., D.V.M., M.S., and F. V. WASHKO, D.V.M.

Lafayette, Indiana

THIS PAPER describes in detail the results of approximately four years' experience in attempting to control swine brucellosis in naturally infected farm herds using the standard agglutination blood test as the sole diagnostic agent. In view of the importance of swine as a source of brucellosis in the human being, it seemed advisable first to investigate control procedures, using test and slaughter of reactors and test and segregation. The data presented result from work with two large and one medium-sized swine herds. Additional herds have been and are under observation, but these three herds were selected for this report because of the completeness of the records to date.

**Herd 1.**—This herd of purebred Berkshires had a history of infection for two years prior to the time control efforts were started. An initial complete test of 215 animals (80 sows and boars, 135 weanling pigs) showed 67.5 per cent of the sows and boars to be reactors or suspects. Since only 7 of the 135 weanling pigs were showing any agglutination titer, it was decided to keep the negative pigs separated from the infected parent stock and test the pigs once per month up to breeding time.

This plan was rigidly followed until November, 1942, when the herdsman felt it necessary to bring the infected parent stock into the same barn with the clean gilts for breeding. Between November, 1942, and January, 1943, infection appeared in the clean gilts and some observed abortions resulted. In view of this failure to maintain the established segregation, it was decided merely to follow the agglutination response and history of this herd for a year before attempting any further control. The percentage of infection remained relatively constant during this interval. No serious abortion rate was observed, but sterility in sows, orchitis in boars, and the birth of weak litters were noted. No special effort was made to separate the pigs from the sows at weaning time, and many of the pigs became infected with the exception of one group which was isolated at 8 weeks of age.

In August, September, and October of 1944, late spring and summer pigs were weaned at 8 weeks of age, tested, and separated from the in-

fectured parent stock by removal to clean grounds and houses. This separation was followed by monthly testing for three months, and then tests were made at irregular intervals up to the present time. Since October, 1944, no reactors have been found in the pigs raised from this herd. All of the infected breeding swine were disposed of for slaughter by the late spring of 1945. The blood lines have been maintained. The results of tests on this herd are presented in table 1.

**Herd 2.**—This herd, consisting of 155 head of purebred Hampshire sows and boars, was located on premises where commercial hog production had been maintained on a large scale for thirty years. In this thirty-year period, the owner stated that about 6 to 8 sows aborted at each farrowing. Orchitis and adhesions between the testes and scrotum were evident in young boar pigs at the time of castration. Such history strongly suggests that brucellosis had been present in this commercial herd but had never seriously curtailed the enterprise. The owner had been ill for a number of years with an obscure type of malady which a physician had later diagnosed as undulant fever. With the change to a purebred herd in 1941, a

TABLE 1—Results of Agglutination Tests Conducted on Herd 1

Date	Breeding stock			Pigs			Total tests
	P.	S.	N.	P.	S.	N.	
7/31/42	35	19	26	7	128		215
8/23/42	3	8	5	8	123		147
9/22/42	1				99		100
11/ 2/42	3			5	95		103 <sup>1</sup>
1/28/43	2			12	4	31	49
8/11/43	37	6	30			32 <sup>2</sup>	
				20	2	15 <sup>3</sup>	
				19	3	27	191 <sup>4</sup>
8/ 9/44	39	18	19	13	1	7 <sup>5</sup>	
				18	9	31	155 <sup>6</sup>
9/12/44			3	3	4	57	67
10/18/44			4	1	5	26 <sup>7</sup>	
						98	134 <sup>8</sup>
11/16/44			26			164	190
12/20/44			26			159 <sup>9</sup>	
						17	202 <sup>10</sup>
1/24/45			29			134	163
3/27/45			32			114	146
6/12/45			91				91
10/24/45			45			66	111
5/15/46			62				62
Totals	120	51	398	86	48	1423	2126

<sup>1</sup>Infected stock put in same barn as pigs. <sup>2</sup>Isolated carefully at weaning. <sup>3</sup>Spring '43 boars not isolated carefully. <sup>4</sup>Spring '43 gilts not isolated carefully. <sup>5</sup>Spring '44 boars not isolated. <sup>6</sup>Spring '44 gilts not isolated. <sup>7</sup>Spring '44 gilts. <sup>8</sup>Fall '44 pigs (mixed). <sup>9</sup>Fall '44 pigs previously tested. <sup>10</sup>Recently weaned fall '44 pigs.

P.=positive agglutination at 1:25 dilution or above. S.=incomplete agglutination at 1:50 dilution, but no complete agglutination at any dilution.

N.=completely negative agglutination at each dilution.

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few abortions were seen, and the owner's son decided to investigate the cause. On the initial test in November, 1942, only 16 of 155 breeding swine showed any significant agglutination titer. With this low percentage of reactors and suspicious animals, it was decided to dispose of all 16 reacting swine and test the remainder of the herd plus some additional summer gilts once per month. Circumstances prevented the first monthly retest, but two months later there

TABLE 2—Results of Agglutination Tests Conducted on Herd 2

Date	Breeding stock			Pigs			Total tests
	P.	S.	N.	P.	S.	N.	
11/17/42	7	9	139				155
12/10/42	1		7				8 <sup>1</sup>
1/28/43	14	2	200				216 <sup>2</sup>
7/19/43	63	21	17				101 <sup>3</sup>
3/23/44	1	2	7				10 <sup>4</sup>
4/12/44	10		15	42	8	32	107 <sup>5</sup>
7/10/44			6	7	2	75	90
7/26/44						46	46
8/5/44			3				3
8/11/44				1	79		80
9/11/44			7	2	4	117	130
10/20/44				7	117		124
11/13/44			4				4
11/21/44			8		130		138
1/17/45			119				119
4/4/45		1	87				88
6/15/45			63				63
10/27/45			49		109		158
2/5/46		1	122				123
5/8/46		2	91				93
Total	96	38	914	51	22	695	1816

<sup>1</sup>All boars. <sup>2</sup>Many sold as breeders. <sup>3</sup>Only 1 known abortion. <sup>4</sup>Boars. <sup>5</sup>Sows separated from pigs in fall of 1943. Pigs not placed on clean ground. P.=positive agglutination at 1:25 dilution or above. S.=incomplete agglutination at 1:50 dilution, but no complete agglutination at any dilution. N.=completely negative agglutination at each dilution.

were 16 reactors and suspects in the 216 breeding animals tested. These reactors were promptly removed. Illness of our personnel prevented further testing in this herd until July 19, 1943, at which time there were 84 reactors and suspects in 101 swine tested. Thus the test and slaughter method, based on agglutination tests of individual swine, had failed under the conditions employed in this herd. These animals had farrowed in the meantime with relatively poor results as judged by litter size and livability, but only one definite abortion was observed.

It was then decided to rebreed these infected sows, separate the fall pigs from the sows at weaning time, and conduct no further tests until the pigs were about breeding age. This plan was in agreement with some recommendations for control being advocated at that time. As can be seen in table 2, this failed; of 82 gilts and boars so separated in the fall of 1943, 50 were reactors or suspects in the spring of 1944. It should be pointed out here that the recommendations for separation of the pigs from the infected sows and removal to clean ground were not followed, as the sows were removed from the pigs at 8 weeks of age and

the pigs were left on the original ground where they were farrowed. This could be an important cause of the failure.

The original, infected breeding stock was still present on this farm and had been rebred for a late spring farrowing in 1944; so it was decided to test, wean, and separate the negative pigs from the infected sows and put the pigs on clean ground. This was done with the results that no positive reactors have been found among the pigs since September, 1944, and no positive reacting swine have been found on this farm since the original, infected brood stock was disposed of in the summer of 1945.

From our observations, the economic loss attributable to brucellosis in this herd, other than inability to sell breeding stock, was the high percentage of sterility in infected sows, small litter size, and poor livability of pigs. During the 1943 spring breeding season, 37 of the first 100 sows and gilts bred had failed to conceive. Now that brucellosis is not present in this herd, the owner reports these factors are much less noticeable than before.

**Herd 3.**—This herd, referred to this department after the local veterinarian had conducted the original herd test, was composed of purebred Poland China swine. The initial tests in September, 1945, showed 33 of 41 yearling boars, 5 of 26 yearling gilts, and 15 of 22 older swine to be reactors. Thus, this herd showed 59.5 per cent reacting animals. Posterior paralysis due to spondylitis was present in 1 sow, and *Brucella suis* was isolated from this sow at the time of autopsy. The yearling boars were castrated and isolated together with the infected sows and put on a separate pasture with other fattening swine. The owner was desirous of attempting to salvage some of the yearling gilts, so an additional test was made on the 21 negative gilts after an interval of three weeks. This test showed 8 more reactors among the 21 gilts. It was decided to keep 12 of the negative yearling gilts, to purchase and subject to test 6 additional gilts and 14 sows, and to wean, test, and segregate the fall pigs from the infected parent stock despite their rather advanced age, which was 9 to 11 weeks. Segregation facilities were not desirable, but a start was made. It will be noted from table 3 that some pigs reacted at weaning time and, although they were removed promptly, additional reactors occurred on subsequent tests. The negative yearling gilts, purchased gilts, and sows remained negative after breeding until they were put together in a field adjacent to the young pigs in February, 1946. Then, as shown by the test conducted on March 26, 1946, a serious spread as evidenced by agglutination reactions occurred in all groups of swine on this farm. Thus, the procedures followed in this herd had failed to control brucellosis.

After the spring farrow of 1946, the pigs were weaned at 8 weeks of age, tested, and the negative pigs placed on clean ground. No reactors have occurred in these pigs to date.

In this work, all blood samples were drawn from the anterior vena cava, a hypodermic syringe and needle being used as described by Carle and Dewhirst<sup>1</sup>. The serum samples were

tested by the standard agglutination procedure, using both the rapid and test tube methods. The antigens used were prepared and furnished by the U. S. Bureau of Animal Industry, Agricultural Research Administration, USDA. The tests were conducted in dilutions of 1 : 25, 1 : 50, 1 : 100, 1 : 200, and 1 : 400. Interpretation of the agglutination test results was rigid. Any animal reacting positively at the 1 : 25 dilution or above was considered a reactor. Incomplete reactions at the 1 : 25 and 1 : 50 dilutions were considered suspicious.

TABLE 3—Results of Agglutination Tests Conducted on Herd 3

Date	Breeding stock			Pigs			Total tests
	P.	S.	N.	P.	S.	N.	
10/16/45	6	3	20	8	5	27	69
10/23/45		1	12				14 <sup>1</sup>
11/ 6/45			32	8		45	86
12/18/45			32	5	2	26	75
1/22/46			32		2	34	68 <sup>2</sup>
3/26/46	16	2	16	12	3	16	65
5/ 6/46						76	76
5/13/46						51	51
6/12/46						120	120
Total	22	6	146	33	12	405	624

P.=positive agglutination at 1:25 dilution or above.  
S.=incomplete agglutination at 1:50 dilution, but no complete agglutination at any dilution.

N.=completely negative agglutination at each dilution.

<sup>1</sup>Purchased sows. <sup>2</sup>Gilts and sows assembled after this test.

#### DISCUSSION

These and other herds form a part of the research program being conducted at Purdue University on swine brucellosis. No herds are taken into the program without the cooperation of the local veterinarian and without an appreciation of research on the part of the owner. This freedom of action is taken so that as much experimental evidence as possible may be gathered. It may be noted that procedures were changed at times in all three of these herds and that at least two types of control were attempted in herds 2 and 3. It is obvious that our objective was not necessarily immediate control, but was to learn as much as possible about control and the pitfalls to be expected. As the field work progressed, additional experimentation in our, and other, laboratories naturally suggested changes in methods or reasons for failure of methods under observation.

From the history and data presented in regard to these three herds, it seems apparent that valuable blood lines may be maintained, and negative replacement gilts and boars can be produced from infected parent stock by the separation of pigs from their infected dams at weaning time. Considerable attention must be paid to maintenance of segregation. Clean premises must be provided for the newly weaned pigs, and enough testing must be applied to the clean group of pigs to remove any latent infection which may be present.

Experimental evidence accumulated by Hutchings, Delex, and Donham<sup>3</sup>, and Cameron and Carlson<sup>4</sup> indicates that the agglutination

test is adequate as a herd or group diagnostic agent, but it may not be sufficiently reliable for diagnosis of brucellosis in the individual animal. The results reported here tend to substantiate this policy which was originally determined from controlled experiments with infected swine maintained in our own experimental herd. For example, of 170 swine of all ages experimentally exposed at Purdue, 25 (14.7%) yielded cultures of *Br. suis* from their blood five to sixty-nine days prior to the time that a diagnostic agglutination titer was demonstrated in the blood<sup>4</sup>. Such findings, along with unsatisfactory results in controlling the disease in the field by use of a test and slaughter procedure, have suggested that when infection is present to any appreciable degree the entire breeding herd should be considered infected and handled as a unit rather than to attempt to salvage negative reacting aged swine from among the positive swine. Test and salvage of negative breeding swine failed in both herds 2 and 3, as reported in this paper.

Ultimately, however, after the positive herd has been segregated for some time it may be possible to salvage some individuals. Cameron<sup>4</sup> has reported: "valuable individuals may be salvaged from a positive unit when the unit is being disposed of . . . a residual low titer remains in many of these animals, but incomplete unpublished data, supported by the findings of McNutt, indicate that they are not spreaders. . . . According to these data, an animal that previously reacted at a higher dilution but which now had a 1 : 25 titer would be much less dangerous than one completely negative in an infected or unknown herd." Thus, the disposal for slaughter of all valuable breeding stock may be inadvisable in some instances when adequate segregation can be maintained for a prolonged period. Such procedures were not attempted in the herds reported here because high prices had not been paid for the breeding stock and the financial aspects were not of primary concern to the owners.

According to this study and that of Cameron and Carlson<sup>4</sup>, many pigs farrowed and nursed by infected sows are not infected at weaning time. Our results indicate that it is advisable to wean the pigs by 8 weeks of age, test all the desirable pigs, and place the negative ones on clean ground. The longer the pigs remain with the infected sows and on potentially infected premises, the greater is the risk of such pigs contracting brucellosis. Weanling pigs have been shown to be susceptible and if not segregated early may become infected. In substantiation of this statement, note the results of failing to isolate the pigs on clean ground in herd 1 during 1943 and 1944, and in herd 2 during the fall of 1943. It is also interesting to note the high incidence of reactors in the boar pigs in herd 1 during this period. Repeated isolation of *Br. suis* from the semen of 6 of these boar pigs has been reported in another paper<sup>7</sup>. Cameron<sup>4</sup> has further shown that such segregation of pigs should be maintained because, as he says, "The basis of the unit-segregation system is: first, the efficiency of the test when applied to

a group; second, the breaking of the chain of infection from infected sow to bred gilt, and from aborting gilt back to resistant, but potential spreader, sow."

The tendency for infected swine of all ages to recover in so far as cessation of agglutination reaction and symptoms are concerned may tempt one to believe that pigs may be readily immunized by procedures comparable to those now in use for cattle. However, two sobering considerations should be kept in mind: first, swine are a serious source of undulant fever; and second, both natural and experimental exposure and reexposure studies with swine have indicated that, although abortions may not occur frequently upon reexposure, many swine do become reinfected and are potential spreaders of brucellosis to other swine and to man.<sup>6,7</sup> The turnover in swine is rapid, and a clean herd may be established within a period of one year. The economic loss caused in swine by brucellosis is apparently much less serious than in cattle. In view of these factors, it seems more logical to attempt control by means of test, segregation of pigs, and eventual disposal of the infected herd.

#### SUMMARY AND CONCLUSIONS

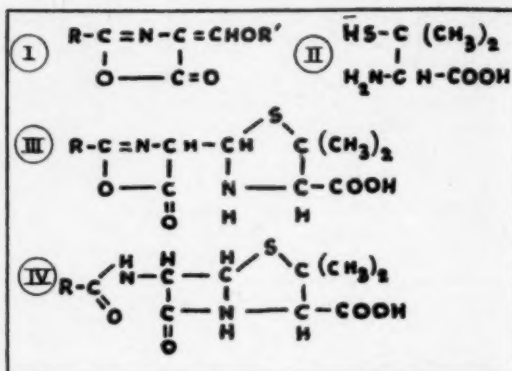
Control procedures for swine brucellosis are described and discussed. Results are presented on the use of test and slaughter or reactors and on test and segregation of pigs from the infected breeding stock, the same herd being used as its own control. The results indicate that a system of test and segregation of negative pigs from the infected parent stock furnishes a satisfactory method of control. This system is based on the use of the agglutination test as a herd diagnostic procedure and the usual absence of infection in many pigs at weaning time.

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- <sup>8</sup>Hutchings, L. M., Delez, A. L., and Donham, C. R.: Studies on Brucellosis of Swine: II. Exposure and Reexposure Experiments with *Brucella suis*. Am. J. Vet. Res., 7, (1946): 11-20.

#### Famous Ersatz—Synthetic Penicillin

Despite \$3 billion spent on penicillin production by the United States, Great Britain, and 11 chemical laboratories, in the belief that synthetic penicillin was but a hope, Dr. du Vigneaud and associates, of Cornell



—From Drug Topics

Chemical Formula of Synthetic Penicillin

University, discovered a way to produce the wonder drug in bulk, dry and durable, and possessing equivalent dynamics, although the molecular structure of the ersatz is still unknown. Thus far (December, 1946) only a small fraction of an ounce has been produced.

#### Trypanosomiasis in Uganda

Trypanosomiasis, mainly caused by *Trypanosoma congolense*, with *T. vivax* playing a secondary part, is the gravest menace to the future of livestock in Uganda, South Africa, where it exists in every district except one and is responsible for the death of many thousands of cattle annually.—Rev. Applied Entomol., abst. from Rep. Vet. Dept., Uganda, 1944.

**Pullorum Variants.**—In a study of regular and variant types of *Salmonella pullorum* (Ronald Gwatkin, *Canad. J. Comp. Med. & Vet. Sci.*, 10, (Sept., 1946): 254-267), a group of 60 reacting birds experimentally infected with variant strains of the organism, examined at the age of 8 to 17 months, showed 32 birds negative to regular antigen, yet *S. pullorum* was isolated from 78.1 per cent of them.

One fourth to one third of a brood sow's ration should be alfalfa.

# Present Status of Streptomycin

HENRY WELCH, Ph.D., and WILLIAM A. RANDALL, Ph.D.

*Washington, D. C.*

IN AUGUST, 1945, a joint board of the Army and Navy requested the Food and Drug Administration to set up standards and controls for streptomycin. A precedent for this request had been established earlier in the case of penicillin, which was tested and controlled for the Army and Navy during the war. The control of penicillin culminated in the penicillin amendment to the Food, Drug, and Cosmetic Act which requires that each batch of penicillin be certified.

During the war, the study of penicillin as a therapeutic agent was placed under the control of the Office of Scientific Research and Development (OSRD) which appointed a committee under the leadership of Dr. Chester Keefer to carry on the investigation. This committee was so successful in its work in evaluating penicillin that the 12 manufacturers of streptomycin requested the OSRD to embark on a similar program with streptomycin. Dr. Keefer was again requested to organize the clinical investigation, and the rôle of the War Production Board (WPB) was taken over by the Civilian Production Administration (CPA) in allocating the streptomycin to the various groups authorized to use it, namely, the Army, Navy, Public Health Service, Veterans Administration, and civilians. Dr. Keefer is again undertaking the unpleasant task of deciding the merits of the so-called civilian panic cases and is distributing the drug to those cases in which its use is justified. While the government subsidized the penicillin program, the streptomycin program is financed entirely by industry.

In coöperation with the Army, Navy, and the various manufacturers of streptomycin, minimum specifications for streptomycin were set up on Nov. 20, 1945. Various technical changes have been made and

the specifications were revised as of July 15, 1946.

Our first thought was the setting up of a master standard and a working standard for assay purposes. As the purest material obtainable was a lot of streptomycin hydrochloride, it was decided to make this the master standard. Since this proved to be unsatisfactory, it has not yet been possible to set up a satisfactory master standard. Streptomycin sulfate was selected as the working standard because it was less hygroscopic than other salts, and 11 streptomycin producers consented to contribute 5 Gm. of streptomycin sulfate. Through a collaborative study, a potency of 400  $\mu\text{g.}/\text{mg.}$  was established for the working standard. When all of the streptomycin sulfate was received it was put into solution and freeze dried. The final product had a moisture content of 2 per cent. Samples were removed for shipping in a dry atmosphere and were supplied to all manufacturers and interested research workers on a monthly basis.

At some future date, when enough crystalline material is available for a master standard, it is planned to conduct another collaborative assay on the working standard. The master standard will probably consist of samples of the crystalline  $\text{CaCl}_2$  compound from three or more companies. These will be assayed and examined crystallographically separately, then mixed and the tests repeated on the mixture. This "master standard" will then be sent along with the working standard to the collaborators. So far, we have had an opportunity to test one crystalline product. This had a theoretical potency of 687  $\mu\text{g.}/\text{mg.}$  when streptomycin base is considered as having a potency of 1,000  $\mu\text{g.}$  of activity per milligram. The assay was run using the streptomycin working standard at 400  $\mu\text{g.}/\text{mg.}$  The average potency obtained by plate and turbidimetric assay was 681  $\mu\text{g.}/\text{mg.}$  which is remarkably good agreement with the calculated figure. It would appear at the present time that a figure of 400  $\mu\text{g.}/\text{mg.}$  for the working standard is a satisfactory one.

Presented before the First General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

From the Federal Security Agency, Food and Drug Administration, Washington, D. C.

Chief (Welch) and bacteriologist (Randall), Division of Penicillin Control, Food and Drug Administration, Washington, D. C.

## METHODS OF ASSAY

In the assay of streptomycin for potency, two methods were used—the turbidimetric and the cylinder-plate technique. The manufacturer of streptomycin sent in one vial (immediate container) for each 5,000 immediate containers in the batch, but in no case less than five containers nor more than 12. The immediate container refers to the commercial package. Two of these containers were diluted volumetrically for assay purposes. This was done because of the large amount of material in the vials which usually consisted of from 0.5 to 1 Gm. of streptomycin plus a somewhat greater weight of impurities. If a constant quantity of diluent was added to the container, the final volume would be greater than the amount of diluent added. This would introduce an appreciable dilution error which, in the case of penicillin, was negligible.

The turbidimetric assay employed as a test organism a nonencapsulated, gram-negative bacillus, while in the plate assay a gram-positive organism, *Bacillus subtilis*, was used. The use of two different organisms in the assay increases the chances of detecting any change in the character or kind of antibiotic in the commercial product as compared to the working standard. Both the turbidimetric and plate techniques are used in assaying all samples, and the reports sent out record the results from both methods.

In the minimum specifications of Nov. 20, 1945, a "double-dose" method of estimating potency was described for the plate technique. The ratio between doses was 1:10 (0.3  $\mu$ g.:3  $\mu$ g.). Using this ratio, the slope of the curve obtained was found to be less than that seen in the penicillin assay and, accordingly, the computed inherent error of the assay was greater. It is quite probable that a different ratio, for example, 1:6 (0.6  $\mu$ g. : 3.6  $\mu$ g.) might have given better results. However, it was apparent that diffusion of streptomycin in agar plates was entirely different than that observed with penicillin. In any case, since the calculations in the two-dose method are time-consuming, it was decided to turn to the method in which potencies can be calculated from a daily curve.

One difficulty experienced with the streptomycin plate assay has been the appearance in the spore suspensions of a small streptomycin-resistant colony which grew in the clear area surrounding the disc. These colonies, however, have not been sufficiently numerous to interfere with the reading of the plates. The resistant variant appeared after the suspension had been stored in the ice box for about two months. Reheating the suspension reduced the numbers of the variant but did not eliminate it, indicating that the organisms were not all in the vegetative state. So far, we have not found a way of eliminating the variant nor of preventing its appearance after storage.

It had been noted that the plate method (using either the two-dose or daily standard curve) gave more variable results than the turbidimetric technique. The greater variability of the plate method was further shown when various concentrations of the standard

were made up and treated as unknown. When this was done, it was found that in the plate method the replicates gave about twice the scatter around the theoretical potency as were found by the turbidimetric assay. If the turbidimetric method continues to give more consistent results than the plate method, eventually the plate method may be used only for check purposes on doubtful samples.

1) *Minimum Potency*.—In the present specifications, the minimum potency of streptomycin is 300  $\mu$ g. equivalent of streptomycin base per milligram of dry powder. This represents a purity of about 35 per cent based on the sulfate. It is expected that in the future this will be gradually raised. Actually, almost all samples recently received vary in potency from 400 to 500  $\mu$ g./mg.

2) *Sterility Test*.—In the sterility test, the streptomycin was inactivated with hydroxylamine. This inactivated 98 per cent of the streptomycin. Inactivation was tested by inoculating one of the tubes of the sterility test with an organism of known resistance to streptomycin. Search is under way for some substance, either chemical or enzyme, which will completely inactivate streptomycin without resulting in bacteriostatic end products.

3) *Pyrogen Tests*.—These are conducted according to the method accepted for the XIII Revision of the Pharmacopoeia, except that the rabbits were rested three days, instead of two, between tests. Ten thousand  $\mu$ g./kg. were injected intravenously.

4) *The Toxicity Test*.—This test consisted in the injection of 1,000  $\mu$ g. per 20-Gm. mouse, intravenously. Death should not occur in forty-eight hours when 5 mice are so injected. The purest preparation of streptomycin yet produced has an LD<sub>50</sub> in mice of 4,500  $\mu$ g.—this is in contrast to an LD<sub>50</sub> of crystalline penicillin of 75,000 units or 45,000  $\mu$ g. It should be emphasized that some of the impurities present in streptomycin may be extremely toxic for mice and, even though one sample of streptomycin may be much purer than another, it may still be more toxic. As far as is known, there is little relation between the intravenous safety test in mice and toxicity for human beings.

5) *Moisture*.—Streptomycin is far more stable in the presence of moisture than penicillin, and 3 per cent moisture is perfectly safe and readily obtainable under present manufacturing methods.

6) *Presence of Histamine-like Substance*.—The occurrence of a histamine-like substance in streptomycin caused some troublesome reactions in early lots which were not previously tested.

It has been shown that samples passing the test set up in the present specifications are unlikely to cause reactions in man. Further improvements in extraction technique have reduced the amount of histamine-like substances to negligible quantities. If, however, dosage schedules are revised so that very large amounts of streptomycin are given, it might be advisable to change the present specifications in favor of a more stringent test.

7) *Test for Streptothricin*.—Streptothricin, a metabolic product of *Streptomyces lavendulae*, has an action similar to streptomycin but is highly toxic. *Streptomyces griseus* also superficially resembles *Streptomyces lavendulae*, and it was thought that there was a possibility of the culture's being inadvertently mixed. Further, it was suggested that *Streptomyces griseus*, under the various growth conditions to which it is subjected, might begin to produce streptothricin instead of streptomycin. For these reasons, it was desirable to set up a test for the detection of streptothricin in streptomycin. The principle of the test rests upon the difference in sensitivity of a certain organism which will grow freely in the presence of 8,000  $\mu$ g. of streptomycin but is inhibited by 8.0  $\mu$ g. of streptothricin.

8) *Clarity*.—Since the dosage range for streptomycin varies from about 50,000 to 200,000  $\mu$ g. per injection, it is obvious that a clear solution must result in a fairly high concentration in order to reduce the volume of fluid injected. Manufacturers are striving to produce a product which will remain clear indefinitely at concentrations of 200,000  $\mu$ g. per cubic centimeter or higher.

As one would expect, the most marked clinical success has been in the case of disease processes attributable to gram-negative organisms. Thus, streptomycin becomes not a replacement for penicillin, but a valuable adjunct. For, even though it is active against numerous gram-positive organisms, it is not nearly so active nor as successful clinically in these conditions as is penicillin.

In infections of the urinary tract, streptomycin has been found of extreme value and has well been termed the "most efficient urinary antiseptic" known so far. The kidney excretes streptomycin rapidly and effectively. As much as 25 per cent of the injected dose appears in the urine within two hours with an average total excretion of 65 per cent. The urinary level in terms of micrograms of the active compound per cubic centimeter is quite high, usually from 400 to 1,500  $\mu$ g./cc., and even the more resistant organisms find survival somewhat difficult.

In tularemia, or rabbit fever, the response was prompt and the high percentage of clinical cures extremely gratifying. Even in cases where cures were not obtained promptly, the course of the disease was remarkably shortened.

In hemophilus influenza meningitis, the clinical cures have been of a degree never yet attained by any other agent and, in gram-negative bacteriemias which formerly had a high fatality rate, the response has been excellent.

In conditions such as tuberculosis, brucellosis, typhoid, wound infections, etc., there has not been sufficient clinical data accumulated to permit a final statement concerning the effectiveness of this agent, but it is certain that in the conditions mentioned, as well as in many others, a varying degree of benefit has been derived. Time may prove streptomycin of little value in some of these diseases; on the other

hand, information gathered from the present studies in these infections may result in revised dosage schedules which will effect a large number of cures in these as well as in other conditions for which it is considered unsuitable at present.

The potentialities of streptomycin may best be illustrated by means of a table which briefly enumerates the known response of a few diseased conditions to streptomycin, without divulging the number of cases so treated or the quantity of streptomycin used. In most cases, however, sufficient data are available to assure the statistical significance of the response.

Potentialities of Streptomycin

	Recovered or Improved	No effect	Died
Urinary tract infections	75%	25%	
Tularemia	94%	6%	
Brucellosis (Improved only)	88%	12%	
Gram-negative bacteriemias	90%	10%	
Typhoid fever (Improved only)	100%		
Hemophilus influenza meningitis	84%		16%
Tubercular meningitis (Improved only)	25%	75%	
Peritonitis	75%	25%	
Upper respiratory infections	80%	20%	

In the clinical administration of streptomycin, the physician and veterinarian will be confronted with the same problem which was presented by penicillin and which, as a matter of fact, has not been entirely solved in the case of penicillin to date—that of route and frequency of administration. When either drug is administered in the ordinary dose, rapid excretion by way of the kidneys in conjunction with the inactivation of a portion in the body results in insufficient blood levels within three or four hours. Consequently, in severe infections, parenteral injections are the preferable route of administration, and must be made at frequent intervals day and night if the desired concentration of the antibiotic is to be maintained. This is particularly true in the case of streptomycin, for ordinarily susceptible strains develop resistance to this antibiotic with a greater rapidity than that commonly found with any other antibacterial agent. There are numerous cases on record in which insufficient treatment has resulted in development of resistance within twenty-four hours with poor clinical results. At the same time, the probability of active stimulation of the infective agent by concentrations of streptomycin somewhat in excess of the minimum bacteriostatic dose, as reported recently by Welch and his coworkers in typhoid infections in mice, greatly magnifies the problem of optimal dosage schedules. This apparent stimulating effect, although unreported clinically as such, to date, has been noticed occasionally in mixed infections in man,—the streptomycin apparently removing the primary infective agent while stimulating a secondary agent to such a degree that infection continues. At present, the following routes of administration are employed:

A) *Parenteral Administration*.—This includes intermittent intramuscular injection, continuous intramuscular drip, and subcutaneous injection. Intravenous injections are not recommended primarily because of the possible presence of histamine-like substances and because of the fact that, when this route of administration is employed, respiratory embarrassment and extreme muscular weakness result in some individuals. The solutions for parenteral administration are usually prepared with distilled water or physiologic saline and are made to contain 50,000 to 100,000  $\mu\text{g./cc.}$  For continuous intramuscular drip, the solution may be prepared by employing any of the common parenteral solutions, for the drug is very stable.

B) *Intrathecal Injection*.—Although experience with this route of injection is somewhat limited, it has been found useful in obtaining therapeutic levels of the drug in the spinal fluid. Here, it is usually employed in doses of 25,000  $\mu\text{g.}$  dissolved in 5 to 10 cc. of sterile saline. In most cases, this is supplemented by appropriate parenteral treatment.

C) *Oral Administration*.—This route is of no value for systemic infections because absorption from the gastrointestinal tract is practically negligible. The recovery of orally ingested streptomycin in the feces is almost quantitative. This route of administration will perhaps be found valuable in various gastrointestinal infections and as a valuable pre-operative measure in abdominal surgery cases because of its ability to eliminate gas-producing organisms from the intestinal tract and to lower (at least temporarily) the total bacterial content of the gastrointestinal tract. In this type of administration, the drug may be given also in any of the common vehicles with no demonstrable diminution in potency.

D) *Topical Administration*.—This route of administration has been employed with a great deal of success, using solutions containing 250 to 500  $\mu\text{g./cc.}$  and even higher in cases where a particularly resistant organism is encountered.

### CONCLUSION

Very little work has been done to determine the efficacy of streptomycin in animal diseases. Undoubtedly, it will find a wide field of usefulness in veterinary medicine since there are a number of animal diseases caused by gram-negative organisms which should be susceptible to this antibiotic. Production of streptomycin has increased relatively rapidly, but at the present time there is only one firm in what could be called commercial production. The other firms interested in the manufacture of streptomycin are still in pilot-plant production. On Sept. 1, 1946, streptomycin was released for civilian use. Up to that time, all streptomycin used by civilians was allocated to specific cases by Dr. Keefer. After Sept. 1, 1946,

streptomycin was allocated to some 1,000 depot hospitals somewhat in the same manner that penicillin was distributed early in its production cycle. Production reached approximately 75,000 Gm. for the month of September. When one considers the relatively high doses necessary to treat diseases susceptible to the activity of streptomycin, this was not a very large amount of antibiotic for widespread use in this country. As a result, it is unlikely that there will be any appreciable amount of streptomycin available for veterinary medicine for some time to come. We feel, however, that because of the extreme importance of determining the place of streptomycin in veterinary medicine that sufficient streptomycin should be allocated to qualified research workers in the field so that a background for its future use can be established.

### Tularemia in Sheep

Tularemia is not confined to wild rabbits and man but is a sheep disease of undisclosed potentiality. In 1934, Philip, Jellison, and Wilkins, of the Montana Livestock Sanitary Board, investigated heavy losses in several large flocks and reported their findings to the American Society of Parasitologists in December of that year. Besides confirming the diagnosis of tularemia in approved fashion, they described the symptoms as dejection, stiff gait, impaired appetite, trailing behind the flock, head low, labored breathing, fever, and often diarrhea with fecal-soiled, fly-blown pudendum and tail region, all leading to complete prostration and death of the severe cases. Low hemoglobin (as low as 20%) and anemia due to blood lost to the heavy tick infestation were found. A stricken jack rabbit picked up in the area contained 143 adult, and 9 nymphal, *Dermacentor andersoni*, but its death may have been due to exsanguination rather than to the infection. Later, *Bacterium tularense* was isolated from other rabbits captured in the epizootic region. The autopsy findings conformed to those of fatal tularemia of man.

The most practical way to control avian and porcine tuberculosis is to sell off all hens at the end of the first laying season.  
—Mr. H. R. Smith.

# NUTRITION

## Raising Heifer Calves on Mastitis Milk

S. D. JOHNSON, D.V.M.

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MUCH of the early research work on bovine mastitis at the New York State Veterinary College was conducted in dairy herds distributed throughout the state. From the records kept for several years, we learned that certain herds were turned over from disease and other causes once in every four or five years. Fifty to 75 per cent of the animals removed annually from problem herds were sold because of mastitis. In those herds where mastitis was rampant and owners had never attempted to prevent and control the disease, we found that the incidence of udder trouble in first calf heifers was especially high.

Mastitis surveys of badly infected herds

quarters producing pus to distinct fibrotic quarters giving flakes, clots, or "off-color" milk. Occasionally, a quarter would be "blind" or dry. At the time of freshening, udders were often unbalanced. While diseased quarters were commonly infected with *Streptococcus agalactiae*, many harbored other types of streptococci, staphylococci, or *Corynebacterium pyogenes*. If the affected quarters were not severely damaged at calving time, they frequently improved so that the milk was physically normal in appearance. However, many were chronic cases of mastitis that flared up repeatedly. Since the milk was often unfit for human consumption, and production was



Fig. 1.—Original open shed built on a private farm for raising calves of both sexes on nurse cows. The shed is approximately 45 ft. by 30 ft. and has four pens.

revealed 45 to 70 per cent of No. 3 and 4 udders by Udall's<sup>4</sup> classification. In a representative 40-cow milking herd, 12 to 15 first calf heifers freshened each year. Two to 5 heifers would calve with various degrees of mastitis, ranging from marked fibrotic

usually below average, the heifers were eventually removed from the herds. The history revealed that several calves were penned together and pail-fed milk from infected udders, especially those producing abnormal milk. When a heifer calved with mastitis, the owner would frequently recall that the other calves in the pen had habitually sucked her udder and teats during calthood. The incidence of mastitis in first calf heifers seemed too high to disregard, even in

<sup>4</sup>Presented before the Section on General Practice, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

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mildly infected herds. No program for the prevention and control of mastitis can be successful without raising heifers with sound udders, as they are the chief source of healthy replacements for dairy herds.

Sanders<sup>1</sup>, Schalm<sup>2</sup>, and Swett<sup>3</sup> have reported various causes of mastitis in heifers. Self-sucking, or sucking by other calves, infection, bruises, injuries, and abnormal stimulation of the udders and teats are mentioned or discussed.



Fig. 2—Machine shed converted into open nurse pens. There are four pens in this unit.

#### EXPERIMENTAL

When an experimental herd composed of grade cows with normal udders and others with advanced mastitis was purchased by the New York State Veterinary College in 1936, a project for raising heifer calves on milk from diseased udders infected with *Str. agalactiae* or hemolytic staphylococci was started. This project was divided into two experiments. In one, the day-old heifer calves were penned separately so that they could not nurse each other's udders and teats. In the second, the calves were penned with 2 or more in a box stall and permitted to habitually nurse each other's udders and teats.

From 1936 to 1941, 14 heifers were raised in the first experiment. Each of the calves received colostrum from their dams and then were penned separately. For six to ten months, they were fed liberal amounts of mixed, raw milk from infected cows kept in the herd. During the five-year period, 8 cows infected with *Str. agalactiae* in 11 quarters and hemolytic staphylococci in nine quarters provided the milk for the calves. Fourteen quarters gave physically abnormal milk (flakes, clots, pus, or watery milk) for several days or months. Twelve heifers freshened. Six gave flakes, clots, pus, or watery milk for one to three milkings. While cultural examinations of the milk at calving time failed to reveal *Str. agalactiae*, one quarter yielded *Streptococcus uberis* in each of two examinations just before the animal freshened, and once the day after calving. Five heifers calved with large numbers of hemolytic staphylococci and high leucocyte counts (one million or more) in 12 quarters. After calving, the staphylococci spontaneously disappeared from two quarters at thirteen and forty-one days, respectively, but

persisted in ten others. Cultures of the secretions from 2 sterile heifers yielded a few hemolytic and nonhemolytic staphylococci. The fresh heifers were stanchioned in the milking line with infected cows and often milked last. Three heifers were infected with *Str. agalactiae* (narrow-zone or broad-zone) during the first lactation period. One heifer was infected at two months after calving in two quarters, and 2 others in one quarter each eight months after calving. Four heifers were free from udder infection the first lactation period, and 1 remained healthy through the second period.

Since June, 1942, 14 heifer calves have been started in the second part of the experiment. Fifteen cows infected with *Str. agalactiae* in 32 quarters, hemolytic staphylococci in six quarters, and *C. pyogenes* in one quarter have supplied the milk for this project. Twenty-nine quarters have given flakes, clots, pus, or watery milk at different times. The heifers were pailed mixed, raw milk from the infected udders



Fig. 3—Inside of an open pen. A creep is installed in the corner to protect calves' grain from cows.

for six to ten months, and were permitted to nurse each other's ears, udders, and teats. Six heifers have freshened. Two gave flakes in three quarters for one or two days after calving. Quarter milk samples from 1 heifer yielded many *Str. agalactiae* on first examination, and then her milk was negative upon subsequent cultural examinations. The milk from 5 other fresh heifers was negative by cultural examinations, as were the secretions from a sterile heifer which never calved. Following parturition, one teat of a heifer was thickened for several weeks, and then it became pliable and soft. No abnormal milk or infection occurred. This group of heifers is being milked ahead of the diseased cows to determine how long they will continue free from infection.

While these research projects involve too small numbers of cows from which to draw conclusions, it is noteworthy that none of the udders of the fresh heifers have been sufficiently damaged to disqualify them for milk production.

Raising calves of both sexes on nurse cows was started in a purebred Guernsey herd of 200 milking cows in December, 1943. About 30 cows are selected each year because of age, sore feet, low production, sterility, and udder trouble, for nurse cows. The cows and calves

are kept mainly in open sheds of different sizes, and each shed is divided into three or four pens which are open on one side. Canvasses are dropped to close the pens during cold nights and blustery days. Each pen is equipped with a creep in one corner so that the calves may always have access to grain which the cows cannot reach. The pens which are 15 to 25 ft. long and 11 to 25 ft. wide will house 2 cows and 3 or 4 calves (fig. 1, 2, 3, 4).

Four-day-old calves are placed in the pens at any time of the year. When a new calf is put

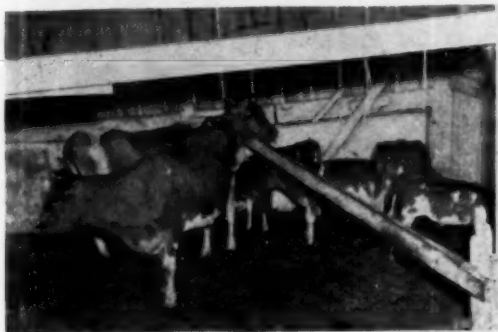


Fig. 4—Open pen showing calves feeding inside of creep.

on a nurse cow, it is allowed 10 lb. of milk per day. Within two weeks, many of the calves are eating some hay and grain. By this system of housing and feeding, the annual calf mortality in this herd has been reduced to less than 3 per cent. The calves are vigorous and well grown when they are weaned at 4 months of age. They show no desire to nurse each other's udders and teats while they are in the pens. It is interesting to learn that the owner has seen only 1 of these heifers nursing another heifer during the past three years in the pasture. During the grazing season, it was common to find heifers which had been pail fed nursing themselves or other animals, thus necessitating special housing at the barn.

While a total of 150 heifers that will freshen in the herd have been started on nurse cows, only 9\* of them raised by this method have calved up to this time. At parturition, their udders were balanced, and the milk was normal in physical appearance. Cultural examinations of the secretions from these udders were negative for pathogenic bacteria. One heifer, fresh in May, 1946, developed acute mastitis in the right hind quarter on Aug. 4, 1946. Following treatment, the milk regained normal appearance but the quarter remained hypertrophic. On Aug. 1, 1946, another heifer which calved in April, 1946, had a mild attack of chronic mastitis in the right hind quarter and improved after treatment. The quarter became atrophic. Within thirty days, 15 bred heifers, grown on nurse cows, are due to freshen.\*

\*Fifteen additional heifers, raised with nurse cows, had freshened and were examined Nov. 1, 1946. By palpation, their udders were excellent in

Their udders are symmetrical and normal by physical examination.

Several of the less damaged udders of nurse cows have improved sufficiently to permit their return to the milking line after they calve. In some cases, hemolytic staphylococci, *Str. agalactiae*, or other types of streptococci have spontaneously disappeared. Others have been treated with udder disinfectants during the dry period and freed from infection.

Raising calves on nurse cows in open sheds appears to have a number of advantages. The calves are healthy and well grown, the milk unsuitable for human consumption is not wasted, and calf mortality from disease is greatly reduced. Barring mechanical accidents, bites from insects, and trouble from unknown causes, the udders of first calf heifers are sound at calving time. Some cows' udders, which would have been permanently ruined from mastitis, make remarkable recoveries and are returned to the milking line. The chief contributing factors may be that the infected udders are kept milked out for a long time, the cows are placed on a restricted grain diet, and are given a three-month dry period before they are due to freshen again. The plan of growing calves on nurse cows promises to be an economical and practical method of furnishing healthy replacements in dairy herds.

#### SUMMARY

1) Twelve heifers, penned separately and pail-fed milk from infected udders, freshened with no *Streptococcus agalactiae*, but ten quarters were permanently infected with large numbers of hemolytic staphylococci. Three heifers became infected with *Str. agalactiae* during the first eight months of the first lactation period.

2) In a second experiment, 6 heifers, penned together and pail-fed milk from infected udders, have freshened. At calving time, 1 heifer yielded *Str. agalactiae* from all quarters on the first cultural examinations of the secretions. Subsequent examinations were negative. Five heifers' udders have remained normal.

3) In a large Guernsey herd, 150 heifer calves have been raised on nurse cows; some with infected udders. Examinations

quality and unusually well balanced. One heifer had injured the right hind teat a few days before freshening, and that terminated in a nonfunctional, atrophic quarter. No physically abnormal secretions were found by strip cup examination of the foremilk or by the bromthymol blue test. Blood-agar plate revealed one quarter with a few narrow-zone and broad-zone streptococci. The secretion carried a 500,000 leucocyte count per cubic centimeter. Six quarters yielded many white nonhemolytic staphylococci, but five were negative to leucocytes and one gave a 2,000,000 count. This evidence would indicate that these 15 heifers freshened with udders that were normal and virtually free from serious infection.

of the 9 heifers, recently fresh, and 15 bred heifers due to calve within a month, revealed no harmful effects to the udders. Several nurse cows with infected udders improved and were returned to the milking line after they freshened.

#### References

<sup>1</sup>Sanders, D. A.: Mastitis in Heifers Following Injury by the Horn Fly, *Haematobia serrata* desv. J.A.V.M.A., 103, (1944): 284.

<sup>2</sup>Schalm, O. W.: *Streptococcus agalactiae* in the Udders of Heifers at Parturition Traced to Sucking Among Calves. Cornell Vet., 32, (1942): 49.

<sup>3</sup>Swett, W. W., Matthews, C. A., and Graves, R. R.: Injury or Infection in Udders of Heifers May Terminate in Blind Quarters. J. Dairy Sci., 22, (1939): 993.

<sup>4</sup>Udall, D. H., Johnson, S. D., and Ferguson, Jean: The Control of Mastitis in New York State. Vet. Med., 33, (1938): 500-509.

### Cannibalism and Stilbestrol

Brandly and his coworkers found, as an interesting sidelight in their work on Newcastle disease, that the collection of cutaneous fat resulting from stilbestrol implantation in cockerels increased the susceptibility to, and the incidence of, cannibalistic and other traumatic injury. —*Am. J. Vet Res.*, July, 1946.

### Wheat Germ Better than Corn Germ

Consistently higher nutritional values were found for wheat germ than for corn germ at protein levels of 10, 15, and 17.5 per cent by Jones and Widness (*J. Nutr.*, June 10, 1946) when fed to weanling rats. On the basis of average gain per gram of protein consumed, the substances tested rated as follows: 10 per cent protein—whole egg powder, skimmilk powder, wheat germ, casein, soybean flour, corn germ, cottonseed flour, and peanut flour; 15 per cent protein—whole egg powder, skimmilk powder, wheat germ, cottonseed flour, casein, peanut flour, corn germ, and soybean flour; 17.5 per cent protein—casein, skimmilk, cottonseed flour, whole egg powder, wheat germ, peanut flour, corn germ, and soybean flour. The animal proteins consistently produce better results than do the vegetable proteins.

Cattle will eat almost twice as much salt if it is available at several places on the pasture instead of only at the water supply.

### Vitamin A Storage

The liver stores from 70 to 90 per cent of the vitamin A in the human body, while the remainder is found in fat, muscle, skin, and bone. A test for deficiency of this substance may be made by feeding massive doses and then checking the blood and the feces. If there is no vitamin A in either serum or feces, then the reserves were low. If vitamin A is present in the feces, but not in the serum, then the body is unable to assimilate the massive dose administered. It has been found that from one large dose the body is able to store enough of the vitamin to last approximately one month.

### Hypomagnesemia

In the course of experiments on protein and vitamin A deficiencies in heifers, S. N. Ray (*Vet. Bull.*, 14, 1944: 134) observed the appearance of syncopic crises. The animals fell abruptly without agitation. The limbs were stiff, eyes half closed, and the temperature normal. After the attack, lasting five or six minutes, the animals rose unaided. The influence of calcium and vitamin A were excluded, but the blood examinations revealed marked diminution of magnesium values during the crisis and returned to normal when the attack was over. Daily administration of magnesium carbonate for seven days raised the magnesium content of the blood but did not prevent relapses unless fed green forage. The conclusion was that, besides having a high content of magnesium, green forage contains a substance that facilitates its utilization.—*Abstr. Rec. Méd. Vét.*, 122, (Sept., 1946): 422.

*Sunflower Culture.*—In the offing for Midwest farming is sunflower culture, which in some important respects excels that of soybeans. The yield is large, food value excellent, and profits attractive. The meat of the seed contains 31 per cent protein and is rich in edible oil. Experiments conducted at the University of Illinois indicate that the sunflower thrives in the latitude of the Cornbelt.—*WLS Broadcast*, Jan. 29, 1947.

It takes about 2 bu. of corn and 150 lb. of alfalfa hay to grow a feeder lamb of 60 lb. into a 90-lb. market or finished lamb.

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# EDITORIAL

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## The "Stepchildren" of the BAI

O. A. Hanke, editorial director of the *Poultry Tribune*, in an article entitled "B.A.I. Stepchild," points out, critically, that the U. S. Department of Agriculture has not established a bureau to look after the \$3 billion poultry industry, and "until a year ago poultry in marketing was tied to the apron strings of the dairy industry in Washington through a joint dairy-poultry branch headed by a dairyman."

The outline below shows that its multiple connections are scattered through three of the Department's grand divisions. The arrangement prompted former Secretary of Agriculture Henry A. Wallace to declare that "Coming to Washington for information about poultry is like hunting for a needle in a haystack." The Secretary had launched a movement to establish a poultry bureau, but the effort was, and still is, ill-timed.

The strange attitude toward bureaus and bureaucrats has not been cured. The cry for more government service in one breath and peremptory demands for less of it in the next are still audible. One cannot be sure on which side of this argument the poultry industry labors. Anyhow, a bureau for poultry would be a signal for a similar set-up for each of the species of farm animals, and that would run contrary to the present trend to abolish bureaus, discharge federal employees, and trim salaries to the bone. It is, therefore, quite evident that the widespread outbreak of bureauphobia will have to be eradicated before Congress is likely to establish a new row of bureaus, needful as the new ones might be to the respective interests.

The editorial further explains that the forming of the Poultry Branch of the Production and Marketing Administration by Secretary Clinton P. Anderson was the first step taken toward basic organization in the poultryman's behalf, but that its "section status" severely restricts needed

research appropriations and handicaps the personnel in respect to salaries.

There is no denying that the livestock industry of this country has become a giant and that each branch (swine, poultry, cattle, etc.) is important to national welfare. But, what its arbiters do not weigh and intelligently approach is the fact that agencies unrelated to veterinary medicine *per se* are involved, and that these sooner or later will break with the Bureau which the veterinarians of the United States set up for them back in 1884, or long before any one of them thought of a bureau designed to promote their economic welfare. The BAI was established as the livestock industry's physician and, while it majored in that rôle through the years without surcease, it had also to take on nonmedical projects which the several branches of the industry now feel they ought to take into their own hands for promotion and management. It would require years, perhaps unfortunate ones, before the results could be weighed. There is danger that the mountain would labor and bring forth a mouse, as it is sure to do unless control of disease is kept at the top of the agenda, instead of *production, distribution, marketing, and price control*.

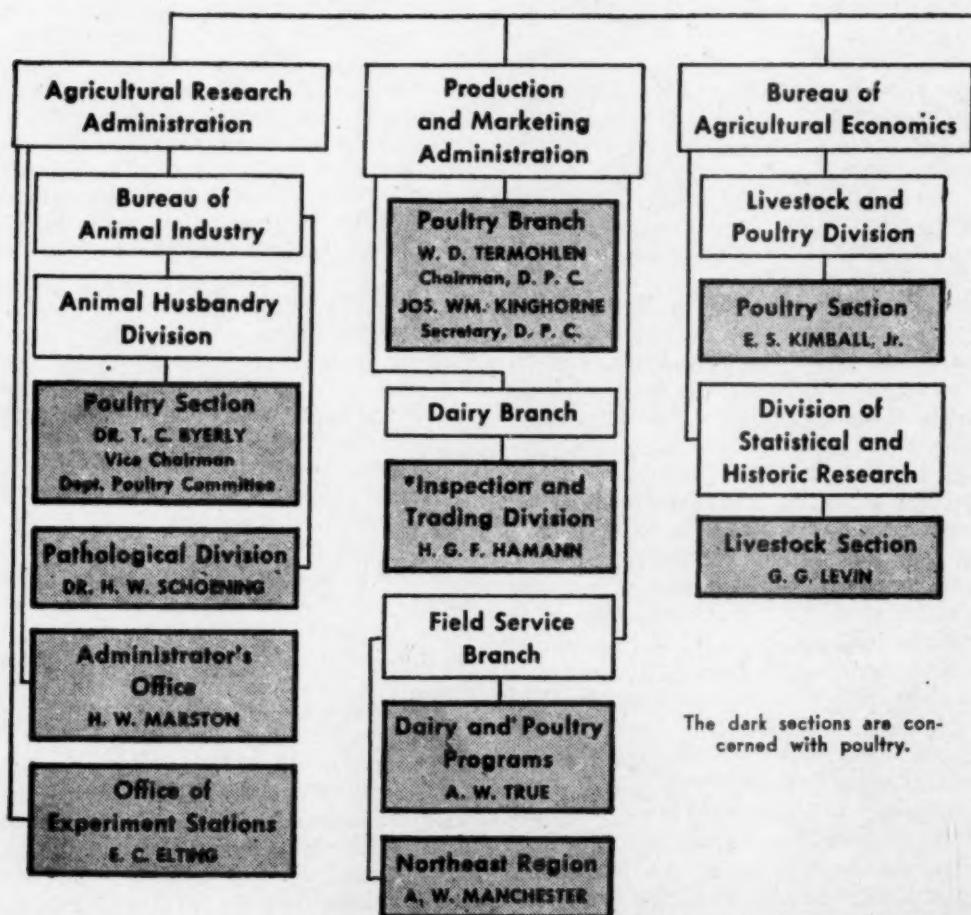
The italicized words would fit better in the Department of Commerce than in the *veterinary service of the United States*, which the Bureau of Animal Industry is under the statutes. The whole situation is entangled, confused, involved. Note the stress put on research appropriations, obviously in the belief that research would be in better hands if a poultryman were in charge. The veterinarians have waited in vain for the Bureau of Dairying (1) to exterminate sterility, brucellosis, mastitis, and infections of the newborn; (2) to establish peace, harmony, and achievement among the exponents of the breeds; and (3) to win the confidence of the farm press. The truth is that health, the cardinal problem of higher life, may be bypassed in

promotional programs if kept exclusively in the hands of commercial interests.

The BAI, the AVMA, the USLSSA, and the experiment stations have more than forty years of experience in applied animal pathology, including poultry. So, the poultry industry may be seeking aid through the wrong channel and in the wrong way. Increasing the consumption of eggs by proper grading, augmenting the demand for wholesome poultry through standard inspection, and reducing the high mortality by mastering diseases might be worth pondering. If the poultry industry is the stepchild of the BAI, some have wondered that it is not an orphan. The load borne by a branch of animal industry that does not admit and study the disease potential is too heavy to carry. World history furnishes the proof. It's like the

handicap a population would bear if the medical profession were abolished. Merely boasting of bigness can not arouse durable support.

By the term "bureau of animal industry" the livestock farmers were lured with all their commercial trouble into an organization formed to attend to their disease problems. On the other hand, the veterinary profession, ignoring the letter of the law that created it, was lured into commercial fields. Under these circumstances, breaking up the BAI into all sorts of administrations, sections, divisions, branches, and services, some not too closely related to one another and some alien to veterinary medicine, was inevitable. A part, but not all, of the straining to get into or out of the BAI can be charged to the failure to establish, right off, a veterinary educa-



—From the USDA, 1946.

Showing the scattered connections of poultry projects in the U. S. Department of Agriculture. There is also a poultry section in the Farm Credit Administration and one in the Extension Service.

tional system to correspond to the magnitude and disease problems of the livestock industry, and to incorporate zootechnics in its broadest sense into its curriculum.

This was not written with the intention of prescribing a remedy. That would be futile pending a more general understanding of the original and present BAI. The article (*loc. cit.*) which forthwith couples *marketing* with *scientific research* tells much in a few words.

### Veterinary Medical Research Urged

Dr. Karl F. Meyer, famed research scientist, director of the Hooper Foundation, University of California, speaking before the veterinary conference held at the California Polytechnic College, San Luis Obispo, in January, warned that "public health is at stake unless veterinarians wholeheartedly back research in the field of veterinary science. . . . Animals are a reservoir of infectious diseases transmissible to the human being. . . . Fighting diseases is not enough. Causes must be discovered through research, and veterinarians must practice preventive medicine if there is to be maximum progress in public health medicine."

The learned Doctor cited rabies, brucellosis, psittacosis, tuberculosis, tularemia, anthrax, and "Q" fever which has but recently appeared in this country, as examples of the veterinarian's obligation in the public health field. That the potentiality of these and other infections and the research that will be required to conquer them represent a vast amount of work on the part of veterinary science was told with force characteristic of this practical scientist.

### History the Guiding Light

As the JOURNAL has pointed out from time to time, the American veterinarian has yet to develop a hunger for the history of his profession and his branch of the medical sciences, confronted as he always was with the bulk of unfinished business more closely attached to his everyday life. But times will change when the finer mechanisms of medical education are all adjusted to the chassis. In this connection, the following resolution presented at the San Francisco session of the American Medical As-

sociation and duly referred for attention (*J. Am. M. A.*, (July 20, 1946): 987) is reprinted for consideration:

WHEREAS, Medicine plays such an important part in the shaping of human destiny through the initiation and activation of spiritual, intellectual and social economic values; and

WHEREAS, A more thorough comprehension of the past in the field of medicine would facilitate the solution of many of the vexing problems now before the medical profession; and

WHEREAS, The chastening influence of the history of medicine on individual members of the profession, an influence of singular value to the zealous young doctor not yet seasoned by experience and not fully aware of his debt to those who have gone before; and

WHEREAS, A wide dissemination of the simple facts about the evolution of medicine and its remarkable accomplishments in the face of recent mounting demands through mechanistic developments would do more than anything else toward a restoration of faith in medicine as now practiced in America; and

WHEREAS, The present mounting interest in medical history throughout the United States affords the American Medical Association an unusual opportunity to assume leadership in this important field; be it therefore

*Resolved*, That the American Medical Association establish a Council or Bureau on Medical History committed to the task of discovering sources, the accumulation and preservation of historical data and possibly the periodic publication of historical studies of interest to the members of the Association or of value to the public; and be it further

*Resolved*, That this Council should be instructed to cooperate with medical schools in the planning of departments or courses in medical history and with the state medical associations interested in local medical history.

Attention is invited, particularly, to thoughts contained in the first two paragraphs in reference to the "spiritual, intellectual, and economic values" of history.

The AVMA met in the South for the first time at Nashville, Tenn., in 1897, or just half a century ago. Since then, there were southern meetings at Atlanta (1901 and 1932), New Orleans (1919), Lexington (1926), Oklahoma City (1935), and Memphis (1939).

# CURRENT LITERATURE

## ABSTRACTS

### Ergot Poisoning in Rats

Ergot from different sources (rye, barley, wheat, and grass), when fed to bred female rats, produced similar toxic effects on reproduction and lactation. Feeding during the first ten days after breeding caused resorption of young; later feeding failed to cause resorption, but the young were about 17 per cent below normal birth weight. Essentially the same effects were observed by feeding a ration containing ergotoxine. The breeding ability of males was not impaired after feeding ergot for two months.—[A. W. Nordskog: *Reproductive Failure and Agalactia in Ergotized Female Rats*. *Am. J. Vet. Res.*, 7, (1946): 490-497.]

### Etiology of Calf Diphtheria

*Actinomyces necrophorus* was not the only organism isolated from naturally occurring cases of calf diphtheria. Enterococci, pyogenic streptococci, staphylococci, micrococci, and corynebacteria, together with saprophytic bacteria, were also recovered. In fact, *A. necrophorus* alone did not cause lesions when injected into the buccal mucosa of rabbits but produced ulcers when used in conjunction with the saprophytic organisms mentioned. Increasing the amount injected, and animal passage, rendered the strain of *A. necrophorus* studied capable of producing lesions. Marked vitamin deficiency increased the severity of the lesions observed.—[J. F. Ryff and A. M. Lee: *The Etiology of Calf Diphtheria*. *Am. J. Vet. Res.*, 7, (1946): 41-44.]

### Streptococcus Reservoirs

*Streptococcus agalactiae* could not be found on the floor or in the bedding beneath infected cows. It was found as a part of the bacterial flora on the hands of two persons who milked by hand, but not on the hands of eight who milked by machine.

Most of the organisms placed on bedding under barn conditions were dead after twenty-four hours, but a few lived as long as six to nine days.—[G. R. Spencer, Janet McCarter, and B. A. Beach: *Reservoirs of Infection of Streptococcus Agalactiae*. *Am. J. Vet. Res.*, 7, (1946): 32-36.]

### Chemotherapy in Trichomonas Foetus

A total of 350 compounds was tested for trichomonadocidal properties by a standardized *in vitro* technique. The results are tabulated

according to the concentration and the time required to kill the trichomonads. Failure of the trichomonads to show motility after transfer indicated that the test mixture was lethal. All tests were run in triplicate, and it is believed that the information gained will be useful in finding a more satisfactory therapeutic agent than is now available for the treatment of bovine trichomoniasis.—[Banner Bill Morgan and Hope M. Campbell: *Chemotherapy of Trichomonas Foetus in Vitro*. *Am. J. Vet. Res.*, 7, (1946): 45-51.]

### Vesicular Stomatitis Virus in Hog Cholera Vaccine

Crystal violet, as used in the preparation of hog cholera vaccine, inactivated vesicular stomatitis virus added to defibrinated hog cholera blood in two to three days. It will not survive the incubation now prescribed for preparing hog cholera vaccine by the crystal violet method.

Properly controlled heating of antisera at 58 to 59 C. for thirty minutes, as has been required of licensed biological firms by the U. S. Bureau of Animal Industry, will render these products free from infective vesicular stomatitis virus.

Phenol was found to have only a slowly viricidal action on vesicular stomatitis virus added to defibrinated hog cholera blood held in the refrigerator.—[M. S. Shahan: *Effect of Temperature, Phenol, and Crystal Violet on Vesicular Stomatitis Virus*. *Am. J. Vet. Res.*, 7, (1946): 27-31.]

### Treatment of Trichomonas Foetus Infection in Bulls

Bulls infected with *Trichomonas foetus* were treated with active trichomonadocidal agents: sodium hypochlorite, sodium perborate, Lugol's solution, sodium dioctyl sulfo-succinate, sodium ethyl mercuri thiosalicylate, alkyl dimethyl benzyl ammonium chloride, trypanflavine. When applied as preputial douches or as ointments, no bulls were cured. It is concluded that topical application of the above agents, as employed in these experiments, shows no promise in treatment of trichomonad-infected bulls.

An unidentified iodine compound, which is produced by oral and intravenous administration of potassium and sodium iodide, shows considerable value as a chemotherapeutic agent in trichomoniasis in bulls. No evidence was

found to indicate that the efficacy of iodide treatment was enhanced by concomitant douching of the prepuce with an oxidizing agent.—[David E. Bartlett: *Experimental Treatment of Trichomonas Foetus Infection in Bulls*, *Am. J. Vet. Res.*, 7, (1946): 417-431.]

### Swine Brucellosis

In this series of experiments, the hogs previously exposed to *Brucella suis* by either natural or artificial means were not as responsive to a second exposure as unexposed swine of comparable ages were to their first exposure, but the resistance or tolerance in these previously exposed animals was not sufficient to prevent reinfection.—[L. M. Hutchings, A. L. Delez, and C. R. Donham: *Studies on Brucellosis in Swine. II. Exposure and Re-exposure Experiments with Brucella Suis*, *Am. J. Vet. Res.*, 7, (1946): 11-20.]

### Mucoid Phases of Brucella

The species of *Brucella* may be dissociated into several distinctly different mucoid or wax-like phases. One mucoid phase of *Brucella abortus* gave rise to daughter colonies which are similar in many respects to the smooth phase colonies.

Mucoid and mucoid daughter phase cells, when injected into guinea pigs, rabbits, or cattle, gave rise, in their blood serum, to specific growth-inhibiting antibodies in high titer and engendered in guinea pigs a high degree of active immunity against experimental infection with the species of *Brucella*.

All the mucoid phases produced agglutinins in low titer in rabbits. Studies which deal with the immunizing potentialities in cattle are in progress.—[I. Forest Huddleson: *The Mucoid Phases of the Genus Brucella*, *Am. J. Vet. Res.*, 7, (1946): 5-9.]

### Acidfast Bacteria in Wood Pigeons

A survey made to determine the incidence of avian tubercle bacillus infection in wild birds revealed in wood pigeons an infection due to an acidfast bacillus that could not be grown on culture mediums. In further studies, it was found that 13 of 230 wood pigeons sent to the laboratory had this peculiar disease. Grossly, the lesions are usually limited to the spleen and liver which may show small punctate foci, miliary lesions, or caseous nodules. Smears of these organs revealed innumerable acidfast rods often occurring in clumps. In some birds, these were found in normal appearing organs. The nutrition of affected birds usually appeared to be good. The histologic changes were those of a typical tuberculous process but, in some cases, no changes could be seen in livers that did show a few acidfast bacteria in smears. Two colored plates representing sections of liver stained by the Ziehl-Neelson method showed enormous clumps of acidfast rods. Cul-

tures of liver and spleen on Loewenstein's and Besredka's mediums showed no growth in three months of incubation. Attempts to grow the microorganism on Dunkin's medium for *Mycobacterium paratuberculosis* also failed. Inoculation of domestic pigeons, cockerels, rabbits, and guinea pigs did not result in any typical disease. In two cockerels and one rabbit, there developed tuberculous-like processes, but it could not be further transmitted. Three inoculated guinea pigs tested with avian and bovine tuberculin gave a distinct reaction to the former, but only 2 gave a slight reaction to the bovine tuberculin. One rabbit gave weak reactions to both.—[M. Christiansen, H. E. Ottosen, and N. Plum: *A Peculiar Infection with Acid-fast Bacteria in Wood Pigeons*, *Skand. Vet-tidskr.*, 36, (June, 1946): 352-369.]

ALFRED G. KARLSON

### Eradicating Swine Brucellosis

A unit segregation system for eradicating swine brucellosis is described, based on the information that weaned pigs remain negative if raised apart from the positive unit. This is true, even if they are weaned from positive sows.

Data are presented to show the absence of infection in young pigs, and on the marked tendency of pigs in the segregated positive unit to recover when not reexposed by contact with newly infected young pigs.—[H. S. Cameron: *Brucellosis in Swine. IV. The Unit Segregation System of Eradication*, *Am. J. Vet. Res.*, 7, (1946): 21-26.]

### Photosensitization by Buckwheat

Three crystalline substances isolated from the buckwheat plant (*Fagopyrum esculentum*) were fed to white guinea pigs in doses of 2 to 5 mg. daily. Each pig showed definite signs of having been photosensitized. The control showed no symptoms of abnormal light sensitivity.—[Simon H. Wender: *The Action of Photosensitizing Agents Isolated From Buckwheat*, *Am. J. Vet. Res.*, 7, (1946): 486-489.]

### Prenatal Growth of Sheep and Cattle

Some bodily dimensions of prenatal sheep and cattle have been studied and compared by the use of relative and absolute measurements. When fetal age was expressed in terms of the elapsed per cent of the gestation period, and fetal measurements were expressed as per cent of final measures, the growth rates of the two species were very similar.

The data indicated that, up to a fetal age of 140 days in the sheep and 160 days in the bovine animal, the fetuses grew at approximately the same rate.—[W. W. Green: *Comparative Growth of the Sheep and Bovine Animal During Prenatal Life*, *Am. J. Vet. Res.*, 7, (1946): 395-402.]

### Poisoning in Domestic Animals

This is a report on the cases of poisoning in animals studied at the State Veterinary Medical Institute in Stockholm during the years 1935 to 1945.

Arsenic poisoning was found in 39 instances, most of which were cattle that had licked impregnated wood. Prior to 1937 before arsenic was used in Sweden to treat wood—telephone and electric line poles,—there were few cases. It had been thought that wood treated with insoluble arsenic salts was not dangerous to animals, but it was found possible to obtain large amounts of arsenic from treated wood by washing with water. Lead poisoning from paint was diagnosed in 32 cases. Mercurial poisoning was found in five instances, two of which were due to a mercurial ointment used for cattle. Copper poisoning was determined in cattle and fowl. Zinc was diagnosed as causing deaths in cattle, pheasants, and poultry.

Preparations used for exterminating rats and other noxious animals were found to be an important source of illness and death in domestic animals. Strychnine, phosphorus, fluorine, or thallium were incriminated in 36 such cases.

Salt poisoning in pigs was traced to some garbage with a high concentration of sodium chloride. Deaths due to high intake of salt were found in mink that ate salt fish and in ducks that had access to brine from salted fish. The use of sodium chlorate to spray vegetation led to chlorate poisoning in cattle in 9 cases. Carbon monoxide, saltpetre, and naphthalene were responsible for a few cases of poisoning in animals.—[Hans Wanntoop: *Poisoning in Domestic Animals*. Skand. Vet.-tidskr., 36, (April, 1946): 213-256.]

ALFRED G. KARLSON

### Testosterone in Canaries

In reference to an abstract in the December, 1946, JOURNAL (p. 495) taken from an article by H. H. J. Fredericks [*Tijdschr. Diergeneesk.*, 68, (May, 1941): 532-540] on testosterone in female canaries. Mr. Howard S. Goldin, Los Angeles, Calif., calls attention to an earlier article on the subject.—[F. M. Baldwin, H. S. Goldin, and M. Metfessel: *Effects of Testosterone Propionate on Female Roller Canaries under Complete Song Isolation*. Proc. Soc. Exptl. Biol. and Med., 44, (1940): 373-375.]

## BOOKS AND REPORTS

### Aids to Goatkeeping

This is the fifth edition of a booklet which has demonstrated its usefulness and popularity. It is a review of the management methods and of the ailments and troubles with which the goatkeeper is confronted. The expressed aim has been to present conservative advice to the beginner and small owner. The foreword emphasizes that "no book can replace a skilled veterinarian in case of actual sickness and disease in livestock," and it does present a wealth

of information which the veterinarian can use in understanding the problems of the goat owner and in applying medical knowledge to the best advantage.

The book is a good one to have or to read in any practice where goats are occasionally or frequently presented for treatment.—[*Aids to Goatkeeping*. By Carl A. Leach. Cloth, 143 pages. Illustrated Dairy Goat Journal, Columbia, Mo. 1946. Price \$2.00.]

### The Problem of Fertility

This book constitutes the proceedings of the Conference on Fertility, held under the auspices of the National Committee on Maternal Health. It is a compilation of 17 papers, each on a phase of the problem of reproduction, each by an authority on that particular phase, and followed by discussion from the floor.

Only one veterinarian appears in the list of authors, and but few participated in the discussion from the floor—a sad, but noteworthy, commentary in view of the fact that much of the work reported was performed on experimental or domestic animals and that the results obtained are being applied to farm animals.

The book contains some chapters which the practicing veterinarian can apply specifically to problems arising in his practice, and it contains others which are highly technical but contain information needed for a full explanation of the cycle of reproduction.—[*The Problem of Fertility*. Edited by Earl T. Engle. Cloth, 354 pages. Princeton University Press. Princeton, N. J. 1946. Price \$3.75.]

### Patterns of Mammalian Reproduction

A complete and concise discussion of the patterns of reproduction in the numerous classes of mammals. Information is not limited to the farm animals but covers all mammals. The histology and physiology of the female and male reproductive tract is discussed for each species with scientific exactitude, with greater stress on those animals which have been important to the research worker in genetics and to the physiologist in the field of infertility. Sometimes, but not necessarily always, the species studied most intensively are also of economic importance.

This is a veritable encyclopedia of information, containing most of the published facts and many hitherto unpublished conclusions concerning the estrous cycle, the output of sex hormones, their effect on the "target" organs, and the resultant sex behavior. It will not serve as a ready reference in answering questions regarding specific cases encountered in a veterinary practice but, for the student of the problems of infertility and reproductive irregularity, it presents a wealth of basic information which will make possible a clearer understanding of the underlying considerations and a greater success in the correction or alleviation of derangements.

The book is primarily for the true student of these problems, not for the casual reader on the subject.—[*Patterns of Mammalian Reproduction*. By S. A. Asdell. Cloth. 437 pages. Photomicrographs. Comstock Publishing Co., Ithaca, N. Y. 1946. Price \$5.00.]

### Los Angeles Livestock Department Report

The annual report of the Los Angeles County livestock situation for the year ending June 30, 1946, is the familiar volume dealing with the animal diseases handled by the sizeable veterinary forces employed fulltime by the county's Livestock Department and headed by County Livestock Inspector Leslie M. Hurt. The documentation in condensed form is famously complete and conveniently indexed. Its pages draw a true word picture of a congested livestock region where few large animals are raised and many imported from both neighboring territory and far-away states, a situation calling for watchful veterinary service of the highest order. Of the total dairy cattle possessions of 127,568, 71,209 were imported and tuberculin-tested during the year. The reactors taken from the imported group were 0.239 per cent as against 0.136 per cent from resident herds totaling 63,552 head. Account is given of the principle cattle diseases encountered and the suppressive measures enforced. Similar coverage is made of the diseases of horses, sheep, swine, goats, poultry, rabbits, chinchillas, foxes, mink, and guinea pigs, with a word on prevention and treatment.—[*Public Document, Los Angeles County Livestock Department*. Edited by Leslie M. Hurt, M. D. V., B. S. Agric., Livestock Inspector. Board. 43 pages.]

### Annual Report, Montana Livestock Sanitary Board

In his report to the Montana Livestock Sanitary Board covering the year ending Nov. 30, 1946, State Veterinarian Butler reports an unusually profitable year for Montana's livestock growers. An increased appropriation permitted the expansion of the services, but work on some projects was hampered by lack of veterinary personnel. The policy of allowing state workers to carry on private practice, as long as it does not interfere with official duties, is considered the foremost reason for Montana's success in holding capable veterinarians on state positions while furnishing a clinical service to the people.

#### PREVALENCE OF DISEASES

**Horses.**—There were no cases of glanders, dourine, or periodic ophthalmia; infectious anemia occurred in two or three districts but did not spread; distemper was controlled; 56 cases of encephalomyelitis with 18 deaths were reported.

**Cattle.**—Of 25,286 tested for tuberculosis in cooperation with the U. S. BAI, only 4 reacted; of 46,865 tested for brucellosis, 1,940 gave a positive reaction and 2,100 were suspicious. Observed with increasing frequency were pulmonary emphysema, pododermatitis, urinary calculi, and infectious keratitis. There was one

outbreak of scabies, 1 case of John's disease, no anthrax, 6 cases of anaplasmosis, 35 cases of "red water," and 2 cases of malignant catarrh.

**Sheep.**—Success was achieved in dealing with formerly troublesome diseases of sheep. Outbreaks of enterotoxemia in five different bands, 80 cases of vibronic abortion, and 1,123 cases of contagious ecthyma were the principal trouble-makers. Internal parasites were well controlled.

There were no serious outbreaks of swine diseases and no cases of rabies in dogs. Satisfactory progress was made in dealing with poultry diseases.

#### DAIRY AND MEAT INSPECTION

A number of the best producing dairies discontinued operations, and not enough licensed-dairy milk was produced in Montana to meet demand. The methylene blue reductase test was used to determine the quality of milk delivered to plants.

Every effort is being made to induce municipalities to institute a system of meat inspection. Eight abattoirs are under state inspection and four are under federal inspection.—[*Report to the Montana Livestock Sanitary Board*. Dec. 1, 1945, to Nov. 30, 1946. By W. J. Butler, Executive Officer. Mimeograph. Helena, Mont., Dec. 1, 1946.]

### Animal Pathology

This is the fourth edition of a text designed primarily for the use of second-year students in veterinary medicine but which is so well written and so thorough that it should occupy a place on the shelf of every veterinary practitioner. From this shelf, it will be taken for frequent consultation, because between its covers there is a description of almost every condition seen in practice, and this description connects the specific lesion with the related organs and organ systems in such a way that the reader has a clear conception of the origin, the local effect, and the systemic effect of its presence.

The text material is divided into 39 chapters for easy organization and is carefully indexed on the last 15 pages so that each item and condition may be located without delay. The book is printed on paper of excellent quality, so that illustrations and photomicrographs reproduce exceptionally well. This means that the type is clear, sharp, and legible also.

Here is an important addition to the library of any veterinarian, and one which will pay for itself in any veterinary practice. For the graduate of a year ago, it presents some new information, but for the graduate of five or more years ago it modernizes veterinary pathology.—[*Animal Pathology*. By Russell A. Runnells. Cloth. 639 pages. 229 illustrations. The Iowa State College Press, Ames. 1946. Price \$7.00.]

In the face of the world food situation, forming the veterinary profession into a better tactical unit appears to be a movement owed to mankind.

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# THE NEWS

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## 1947—Convention News

*Place—Cincinnati, Ohio*

*Headquarters—Netherland Plaza*

*Dates—August 18-22, 1947*

*Hotel Reservations—See advertising page xxxix for blank*

The Committee on Local Arrangements (February JOURNAL, p. 134) met on the evening of Feb. 7, 1947, to report on detailed plans for the convention. Earlier, the subcommittee on budget (Drs. A. G. Madden, R. G. Kerans, J. L. Jones, J. A. Winkler, and AVMA Secretary Hardenbergh) had met in order to draft a tentative budget for the various regular and special features of the session. This budget, together with the registration fee recommended for approval by the Executive Board, was adopted by the committee chairmen.

### PROGRAM ARRANGEMENT

Further development of the tentative program was made which will be helpful in making hotel reservations. The schedule to date follows:

*Saturday, August 16.*—Board of Governors.

*Sunday, August 17.*—Meetings of Executive Board and committees; advanced registration.

*Monday, August 18.*—A.M.—Registration; House of Representatives; opening of exhibits, committee meetings. P.M.—Opening Session; nomination of officers; reception for women. Night—House of Representatives.

*Tuesday, August 19.*—General sessions; Women's Auxiliary luncheon and meeting; young peoples' "mixer"; floor show and dance.

*Wednesday, August 20.*—Section meetings; general sessions; sight-seeing tour for



The Island Queen anchored in the Ohio River off the Cincinnati shore.

women; annual banquet, president's reception and dance.

**Thursday, August 21.**—Section meetings; general sessions; alumni luncheons; broadcast and lunch for women.

**Friday, August 22.**—Plans for post-convention activities not decided; golf tournament for the AVMA cup may be held on this day or earlier in the week.

#### SUNDAY ARRIVAL URGED

In making travel plans and hotel reservations, it is recommended that convention-goers schedule their arrival, if possible, for Sunday, August 17. Convention delegates will find that they will be roomed at the hotels more expeditiously on Sunday and will then be rested and ready for the opening of the program on Monday. Such early arrival will also enable members and their wives to register for the convention so that they can have the entire forenoon on Monday to visit the educational and commercial exhibits.

#### USE THE HOTEL RESERVATION BLANK

The Committee on Local Arrangements for the Cincinnati session is well ahead in their work and anticipate a record-breaking attendance; they are, therefore, making special plans to insure outstanding entertainment and a good time for everybody. A considerable number of hotel reservations have already been received by the Housing Bureau and members are urged to send in, as soon as possible, the hotel reservation blank furnished on advertising page *xxxix* of this issue.

#### Dr. C. P. Zepp, Sr., Elected to Executive Board

The recent special election in District IX (New York and the New England States) has resulted in the naming of Dr. C. P. Zepp, Sr., of New York City, to fill the unexpired term in that district, brought about by the election of Dr. W. A. Hagan, former incumbent, as president-elect of the Association at the Boston session. The term of Dr. Zepp will expire at the conclusion of the annual meeting in Cincinnati, August, 1947.

A regular election will be held in District IX, also in District I (Canada), beginning about April 1, 1947, for the purpose of selecting members of the Executive Board in these districts for full five-year terms.

#### Attention, Association Secretaries

The Special Committee on Enforcement of the Code of Ethics appreciates the cooperation of those constituent associations and their secretaries who have returned the questionnaire sent out by the committee on Nov. 18, 1946. Some associations have not yet met and others will not meet until after the 1947 AVMA convention. However, since the future work of the committee depends upon information obtained from the questionnaires, an appeal is made to these latter associations to give the matter spe-

cial attention and return the questionnaire not later than March 31, 1947. This will enable the Committee to complete its report for the AVMA session next August.

Attention of all AVMA members is again invited to the report of the committee which was published in the JOURNAL, November, 1946, pp. 440-441.

#### SPECIAL COMMITTEE ON ENFORCEMENT OF CODE OF ETHICS

S. W. HAIGLER, *Chairman*.  
R. A. MERRILL  
R. C. SNYDER

#### Officers, Headquarters, and Dates for 1948 Convention Selected

President E. G. LeDonne, of the California State Veterinary Medical Association, has appointed the following general officers to head the committee on local arrangements for the 1948 annual convention which will be held in San Francisco:

**General Chairman.**—Dr. Joseph M. Arburua, 26 Fell St., San Francisco.

**Vice Chairman.**—Dr. S. T. Michael, 2500 16th St., San Francisco.

**General Secretary.**—Dr. Charles J. Parshall, 530 Fulton St., San Francisco.

Because current conditions required early decision on 1948 convention plans, Executive Secretary Hardenbergh attended the state meeting in San Luis Obispo, January 6-8, 1947, and then spent three days in San Francisco inspecting hotel and meeting facilities and conferring with local AVMA members and convention bureau officials. As a result, the Palace Hotel was selected as convention headquarters and the dates of August 16-19, 1948, were tentatively set for the meeting dates, both having been later officially confirmed by the Executive Board.

A meeting of AVMA members in the Bay area held on the evening of January 10 to serve as a steering group in making preliminary plans for the 1948 session, was attended by the following: Drs. E. G. LeDonne, Oakland, and Floyd H. White, San Rafael, president and secretary, respectively, of the California State Veterinary Medical Association; Drs. Joseph M. Arburua, S. T. Michael, Charles J. Parshall, and Oscar J. Kron, of San Francisco; Dr. G. P. Bertella, San Francisco, secretary of the Bay Counties Veterinary Medical Association; Dr. O. W. Schalm, Berkeley, representing the Division of Veterinary Science, University of California; Mr. Gary Kreidt of the Convention Bureau and Secretary Hardenbergh.

The Palace Hotel offers splendid facilities for all features of an AVMA convention, and had been selected by the local committee for the 1942 meeting which was a war casualty. Other leading hotels conveniently accessible to convention headquarters have allocated rooms for the 1948 dates, in line with a much more liberal policy recently adopted by the local hotel association, so that those who are looking forward to the trip to San Francisco can rest assured of good accommodations.

## Sixth Report on Contributions to AVMA Research Fund

Geographical Breakdown as of February 10, 1947

The sixth bimonthly report on contributions to the AVMA Research Fund shows an increase of nearly \$7,000 since the last report was published (*The JOURNAL*, January, 1947, p. 47). Florida is added to the group of states in bold face listing, signifying that their quotas have been reached or exceeded.

The last date for filing applications for Research Council fellowships for the academic year 1947-48 was March 1, 1947, as announced in previous issues.

State	Total Veterinarians	Quota*	No. of Contributions	Amount Contributed	% of Quota
Alabama	125	\$ 1,250	32	\$ 480.00	38.4
Arizona	42	420	11	145.00	34.5
Arkansas	59	590	12	116.17	19.1
California	1,044	10,440	350	6,523.00	62.5
Colorado	177	1,770	94	2,175.00	122.8
Connecticut	136	1,360	58	1,038.00	76.3
Delaware	32	320	6	60.00	18.7
District of Columbia	58	580	32	812.00	140.0
Florida	142	1,420	83	1,537.25	108.2
Georgia	147	1,470	42	640.00	43.5
Idaho	71	710	31	370.00	52.1
Illinois	1,224	12,240	200	4,215.30	34.4
Indiana	585	5,850	80	1,137.00	19.4
Iowa	865	8,650	260	5,588.31	64.6
Kansas	404	4,040	85	1,895.00	46.9
Kentucky	137	1,370	31	332.00	24.2
Louisiana	85	850	16	275.00	32.3
Maine	68	680	27	650.00	95.6
Maryland	165	1,650	51	980.00	59.3
Massachusetts	206	2,060	81	2,500.00	120.1
Michigan	550	5,500	123	2,213.00	40.0
Minnesota	403	4,030	104	1,429.50	35.4
Mississippi	99	990	16	220.00	22.1
Missouri	356	3,560	72	3,700.00	103.9
Montana	63	630	26	255.00	40.5
Nebraska	281	2,810	82	1,418.75	50.5
Nevada	27	270	8	110.00	40.7
New Hampshire	35	350	12	150.00	42.8
New Jersey	301	3,010	80	1,335.50	44.3
New Mexico	29	290	14	352.50	121.5
New York	980	9,800	358	6,876.00	70.1
North Carolina	135	1,350	47	615.00	45.5
North Dakota	73	730	13	285.00	39.0
Ohio	740	7,400	221	3,541.00	47.8
Oklahoma	110	1,100	58	780.00	70.9
Oregon	175	1,750	51	915.00	52.2
Pennsylvania	656	6,560	146	2,856.50	43.5
Rhode Island	25	250	19	755.00	302.0
South Carolina	80	800	14	255.00	31.8
South Dakota	118	1,180	24	366.00	31.0
Tennessee	93	930	34	452.50	48.6
Texas	421	4,210	97	1,267.75	30.1
Utah	45	450	27	290.00	64.4
Vermont	96	960	39	695.00	72.4
Virginia	130	1,300	51	795.00	61.1
Washington	226	2,260	68	1,026.00	45.4
West Virginia	65	650	10	115.00	17.7
Wisconsin	502	5,020	104	1,700.00	33.8
Wyoming	38	380	28	335.00	88.1
Hawaii	16	160	16	410.00	256.3
Canada			12†	635.25	...
Totals	12,640	\$126,400	3,556	\$67,619.28	53.5*

\*Based on an average contribution of \$10.00 per veterinarian. However, the total amount contributed to date is 67.6 per cent of the original goal of \$100,000.

†Includes contribution of \$500 from Ontario Veterinary Association.

## Radio Programs Scheduled by Constituent Associations

The table below shows a partial list of radio broadcasts which are being sponsored by constituent veterinary associations in the United States and Canada during 1947. These have been arranged in cooperation with leading radio stations and utilize scripts furnished by the public relations department of the AVMA, a service made available to veterinary associations since 1943 without charge.

In addition to the programs listed by 15 associations, there are several more which are completing arrangements or which are already utilizing the scripts on local stations. In all, it is anticipated that at least 25 associations will take advantage of the service offered by the AVMA as announced in the JOURNAL for December, 1946, p. 499. Any veterinary association interested in sponsoring these broadcasts during 1947 may still obtain the service by writing promptly to the central office.

Partial Schedule of State Association Broadcasts

State	Station	Location	Day of Week	Time	Name of Program
Arizona	KOY	Phoenix	1st Tuesday of Month	11:45 a. m.	"Dinner Bell Hour"
Kansas	KSAC	Manhattan	2nd and 4th Friday of Month	1:15 p. m.	"Veterinary Medicine Interview"
Louisiana	WWL	New Orleans	?	6:00 a. m.	"Dixie Agricultural Program"
Michigan	WKAR	East Lansing	Every Tuesday	12:40 p. m.	"Animal Disease Control"
Missouri	KMBC	Kansas City	Every Saturday	12:20 p. m.	"Animal Health"
North Carolina	WWNC	Asheville	Every Monday	12:30 p. m.	"WMNC Farm Hour"
North Dakota	NDAC	Fargo	Daily	6:15 a. m.	"Agriculture in the News"
Ohio	WOSU	Columbus	Every Friday	12:00 noon	"Farm and Home Hour"
Pennsylvania	WFIL	Philadelphia	Every Tuesday	6:30 a. m.	"Farmers' Market"
Texas	NTAW	College Station	Every Monday	7:15 a. m.	"Let's Produce Healthy Livestock"
Vermont	WCAX	Burlington	Every Thursday	1:00 p. m.	"Farm Program"
Wyoming	KWOR	Worland	Every Thursday	8:00 a. m.	
British Columbia	CBC	Vancouver	Every Friday	12:00 noon	"Farm Program"
Central Canada	CKCO	Ottawa	Every Wednesday	12:15 p. m.	"Farm Broadcast"
Quebec	CKAC CBF	Montreal	Every Friday or other days	12:00 noon and 12:30 p. m.	"Rural Program"

## APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

### First Listing

BRYSON, GARLAND A.  
1018 Jacobs St., Shreveport 15, La.  
D.V.M., Indiana Veterinary College, 1924.  
Vouchers: C. M. Heflin and P. L. Piercy.  
FRANKS, K. W.  
Minden, La.  
D.V.M., Ohio State University, 1914.

Vouchers: J. A. Goodwin and J. H. Gillmann.  
GEST, JOHN F.  
Rt. 2, Loveland, Ohio.  
D.V.M., Cincinnati Veterinary College, 1916.  
Vouchers: A. G. Madden, Jr. and R. G. Kerans.  
HOWELLS, OWEN  
12 Adams Ave., Ferguson 21, Mo.  
D.V.M., Colorado State College, 1913.  
Vouchers: E. A. Garleb and W. R. Scott.  
McCLELLAND, FRANK E. JR.  
455 Ellicott St., Buffalo 3, N. Y.  
D.V.M., Cornell University, 1940.  
Vouchers: F. E. McClelland and D. A. Tillon.

- McCLELLAND, ROBERT B.**  
455 Ellicott St., Buffalo 3, N. Y.  
D.V.M., Cornell University, 1934.  
Vouchers: F. E. McClelland and D. A. Tillon.
- MEIXEL, EARL J.**  
2806 Soniat St., New Orleans 15, La.  
D.V.S., Kansas City Veterinary College, 1908.  
Vouchers: E. P. Flower and M. H. Gandy.
- MILLER, S. GLEN**  
667 Agar St., Oakland, Calif.  
D.V.M., Colorado State College, 1943.  
Vouchers: J. E. Wim and J. H. McChesney.
- MORROW, ALAN**  
Little Falls, Minn.  
D.V.M., Ontario Veterinary College, 1939.  
Vouchers: W. L. Boyd and H. C. H. Kernkamp.
- POWERS, CECILIA D.**  
Center St., Dover, Mass.  
V.M.D., University of Pennsylvania, 1946.  
Vouchers: S. R. Orcutt and A. T. Bowen.
- SOLIS, JOSE A.**  
College of Veterinary Science, University of the Philippines, Pandacan, Manila, Philippines.  
D.V.M., College of Veterinary Science, University of the Philippines, 1934.  
Vouchers: A. K. Gomez and A. C. Gonzaga.
- SPEER, WILLIE D. JR.**  
538 S. Madison, Tulsa, Okla.  
D.V.M., Texas A. & M. College, 1946.  
Vouchers: W. W. Armistead and C. O. Morgan.
- STAPP, EARL W.**  
20445 Fenkell, Detroit 23, Mich.  
D.V.M., Indiana Veterinary College, 1924.  
Vouchers: A. R. Bruner and B. H. Swim.

## Second Listing

- Aranez, Jose B., Tanauan, Batangas, Philippines.
- Batsche, Joseph H., 3962 Lowry Ave., Cincinnati 29, Ohio.
- Bule, Robert C., Boerne, Texas.
- Dunlap, Mary K., 423 West 59th St., Kansas City, Mo.
- Hickman, William M., 605 Garrard St., Covington, Ky.
- McBride, Andrew L., 4936 Pine St., Omaha 6, Neb.
- Pas, Harold H., 21 Livestock Exchange Building, Wichita 2, Kan.
- Queiroz, Eduardo R., Avenida Borges de Medeiros, 549 40 andar., Porto Alegre, Rio Grande do Sul, Brazil.
- Scatterday, James E., P. O. Box 633, Gainesville, Fla.
- Slatko, Leon, 1816 Colonial Ave., Waco, Texas.

## 1947 Graduate Applicants

### First Listing

The following are graduates who have recently received veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (\*) after the name of a school indicates that all of this year's graduates have made application for membership.

## Colorado A. & M. College

- SCHROEDER, STANLEY W., D.V.M.**  
Venango, Neb.  
Vouchers: R. F. Bourne and H. W. Johnson.

## Michigan State College

- ARONSON, FRED, D.V.M.**  
643 N. Cicero Ave., Chicago, Ill.  
Vouchers: E. E. Eads and E. K. Sales.
- BILBY, S. WAYNE, D.V.M.**  
Brown's Station, Mo.  
Vouchers: L. B. Sholl and C. S. Bryan.
- HALLETT, T. W., D.V.M.**  
320 Lakeview Drive, Ann Arbor, Mich.  
Vouchers: L. B. Sholl and C. S. Bryan.
- PHILLIPS, HOWARD C., D.V.M.**  
Winchendon, Mass.  
Vouchers: W. O. Brinker and E. K. Sales.
- PLATT, JUNE H., D.V.M.**  
513 Albert Ave., East Lansing, Mich.  
Vouchers: C. S. Bryan and B. J. Killham.
- RASKIN, HENRY, D.V.M.**  
20198 Livernois, Detroit, Mich.  
Vouchers: R. Hatch and F. Thorp, Jr.
- RÜCK, CHARLES M., D.V.M.**  
Royal Center, Ind.  
Vouchers: J. F. Knoble and E. W. Spieth.
- SULLIVAN, THOMAS B., D.V.M.**  
511 Madison Ave., Steubenville, Ohio.  
Vouchers: W. F. Riley Jr. and C. F. Clark.

## Ontario Veterinary College

- MARCUS, JOHN F., D.V.M.**  
Kincardine, Ont., Can.  
Vouchers: A. L. MacNabb and R. A. McIntosh.

## Texas A. & M. College

- BENSON, WILLIAM R., D.V.M.**  
503 South Monroe, San Angelo, Texas.  
Vouchers: W. W. Armistead and R. P. Marsteller.
- BROWN, ROBERT D., D.V.M.**  
Rt. 1, Cisco, Texas.  
Vouchers: V. B. Robinson and G. R. Burch.
- HOWELLS, WILLIAM V., D.V.M.**  
12 Adams Ave., Ferguson, Mo.  
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.
- JUNGERMAN, PAUL F., D.V.M.**  
208 East Church St., Aurora, Mo.  
Vouchers: R. C. Dunn and R. P. Marsteller.
- MCCOLLUM, BEN B., D.V.M.**  
Box 771, Stephenville, Texas  
Vouchers: V. B. Robinson and G. R. Burch.
- VAN NICE, ROBERT W., D.V.M.**  
Toledo, Iowa.  
Vouchers: R. C. Dunn and W. W. Armistead.

### Second Listing

## Kansas State College\*

- Ballentine, Jack G., D.V.M., 210 Clark St., Bonner Springs, Kan.**
- Barry, James W. Jr., D.V.M., 5000 Wells Rd., Kansas City 3, Kan.**
- Carnes, John F., D.V.M., 2702 W. Okmulgee, Muskogee, Okla.**
- Cherry, Brainerd G., D.V.M., Redwood Falls, Minn.**

Comba, Louis C., D.V.M., 112 E. Fourth St., Picher, Okla.  
 Cordero, Rosendo, D.V.M., Box 275, Humacao, P. R.  
 Cornell, Robert L., D.V.M., 662 S. McDonnell, Los Angeles 22, Calif.  
 Diaz, Jose A., D.V.M., Box 723, Rio Piedras, P. R.  
 Fogleman, Ralph W., D.V.M., Colby, Kan.  
 Frazier, Samuel G., D.V.M., Soddy, Tenn.  
 Frey, William A., D.V.M., 636 E. Iron, Salina, Kan.  
 Geisler, Ordella, D.V.M., 919 L. Lincoln, Neb.  
 Hardin, Clarence E., D.V.M., 815 B. St., Petaluma, Calif.  
 Herbert, Benjamin O., D.V.M., 505 Olive St., Menlo Park, Calif.  
 Hervey, James S., D.V.M., Belle Paine, Kan.  
 Hubbs, Junior C., D.V.M., Box 453, Dorrance, Kan.  
 Ingmire, Cecil W., D.V.M., 125 N. Rockhill, Council Grove, Kan.  
 Johnson, Milo L., D.V.M., 2000 Willow Ave., Topeka, Kan.  
 Kaslow, Ruth, D.V.M., 2080 84th St., Brooklyn, N. Y.  
 Kelly, Arthur L., D.V.M., Carroll, Iowa.  
 Kinard, Harold W., D.V.M., Box 413, Ruffin, S. Car.  
 Linders, Robert E., D.V.M., Baldwin, Ill.  
 Low, Donald G., D.V.M., 639 Grant St., Denver 3, Colo.  
 Luke, Otto F. Jr., D.V.M., Solomon, Kan.  
 McHenry, Leslie J., D.V.M., c/o Maison May, 943 1st Ave., New York, N. Y.  
 McLaughlin, Alvah R. Jr., D.V.M., 219 W. 7th St. Terr., Kansas City 5, Mo.  
 Moles, Clyde E., D.V.M., 3611 Walnut St., Kansas City 2, Mo.  
 Narotsky, Saul, D.V.M., Columbia, Conn.  
 Norby, Marvin A., D.V.M., 207 S. Iuka, Pratt, Kan.  
 Nord, Seymour D., D.V.M., 299 Vassar Ave., Newark, N. J.  
 Oliver, Pedro A., D.V.M., Del Carmen St. No. 1303, Santurce, P. R.  
 Parker, Jack A., D.V.M., Byers, Texas.  
 Pumphrey, Olen, D.V.M., Fort Branch, Ind.  
 Rehfeld, Carl E., D.V.M., Warner, S. Dak.  
 Ronk, Howard W., D.V.M., 434 Shoshone St. W., Twin Falls, Idaho.  
 Santiago, Francisco M., D.V.M., P. O. Box 23, Penuelas, P. R.  
 Schwartz, William, D.V.M., 7701 Bay Parkway, Brooklyn, N. Y.  
 Warren, Dale M., D.V.M., 13 West Oak St., Fort Scott, Kan.  
 Williams, Ivor, D.V.M., 2919 N. Arno St., Albuquerque, N. M.  
 York, Fred A., D.V.M., Box 268, Panora, Iowa.

### Michigan State College

Browne, Josephine, D.V.M., 1132 Third Street N., Fargo, N. Dak.

## U. S. GOVERNMENT

**Research in Grub Control.**—A bill was introduced in the House of Representatives by Dr. George W. Gillie on Jan. 16, 1947, which would

authorize, if passed, additional research and investigation into problems and methods relating to the eradication of cattle grubs. The bill (H.R. 1043) was referred to the Committee on Agriculture.

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### Veterinary Personnel Changes in the Bureau of Animal Industry

#### TRANSFERS

Gordon W. Blake, from Portland, Ore., to Helena, Mont.

T. Bernard Sawyer, from E. St. Louis, Ill., to Fort Dodge, Iowa.

#### RESIGNED

James M. Huff, Little Rock, Ark.

John L. O'Neill, Columbus, Ohio.

Elmer R. Pick, Des Moines, Iowa.

#### DIED

Glenn D. Ashley, Columbus, Ohio.

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**Research Fellowships.**—The National Institute of Health Research Fellowships will award increased numbers of fellowships during 1947 to applicants with postgraduate work in fields of science allied to public health. Junior research fellowships (\$2,400 per annum) are available to individuals holding master's degrees or the equivalent number of hours in postgraduate study; senior fellowships (\$3,000 per annum) require the doctorate degree. Applications may be made at any time during the year and are effective for one year from the time of award, with a possibility of renewal for a second year. Letters of inquiry should be addressed to the director, National Institute of Health, Bethesda 14, Md.

The Institute has also announced the formation of a bacteriology study section to consider requests for grants in aid in this field. Professor G. M. Dock, University of Chicago, Chicago, Ill., is the chairman of the section. Dean W. A. Hagan, of the New York State Veterinary College at Ithaca, is a member of the study section. Applications should be made to Dr. C. J. Van Slyke, chief, Research Grants Division, National Institute of Health, Bethesda 14, Md.

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### U. S. Examinations for Veterinarians

Applications for veterinary posts, as outlined below, must be received in the U. S. Civil Service Commission in Washington, D. C., not later than March 11, 1947.

These positions, the majority of which are in the Bureau of Animal Industry, USDA, are located throughout the United States, principally in the midwestern section of the country. The salaries range from \$2,644 to \$4,149 a year.

No written test is required for this examination. To qualify, applicants must have completed a full course of study in veterinary medicine in a college or university of recognized standing. In addition, applicants for the higher grades must have had experience in professional veterinary work. Graduate study may be substituted for one year of this required professional experience. Applications

for the lowest salary level will be accepted from students who expect to complete the required courses not later than June 30, 1947. The age limits, 18 to 62, will be waived for persons entitled to veteran preference.

Information and application forms may be obtained from most first- and second-class post offices, from civil service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C.

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**Revision of The 28 Hour Law Under Consideration.**—The so-called 28 Hour Law, in effect since congressional enactment in June, 1906, is under study for possible revision by a conference committee comprising representatives of the railroads, livestock, stockyard and shipper organizations, the National Livestock Loss Prevention Board, the American Humane Association, and the U. S. Department of Agriculture, which administers the law. A preliminary conference was held in Chicago on Feb. 12, 1947, and was attended by about 50 individuals from the organizations named.

The present law requires, essentially, that livestock transported by rail in interstate commerce shall be unloaded for rest, feed, and water at intervals not to exceed 28 hours except that, on specific request of the owner, the period may be extended to 36 hours. Since the present act does not apply to motor vehicles which currently transport a large percentage of livestock to markets, it has been felt for some time that amendment of the act is desirable for humane and economic reasons so as to include such vehicles and other common carriers, also that the law may be modified in other respects advantageous to both shippers and carriers, and in the interests of humane handling of livestock.

The conference committee appointed at the meeting on February 12 will consider what revision, if any, of the present law is indicated and will endeavor to work out such revision after consulting all interested agencies.

## AMONG THE STATES AND PROVINCES

### Arizona

**State Association Meeting.**—The annual meeting of the Arizona Veterinary Medical Association was held in Old Main at the University of Arizona, Tucson, on January 25, 1947. Dr. Clayton E. Mikkelsen, practitioner of Phoenix, who was named president-elect at the 1946 annual meeting, took office as president, succeeding Dr. William J. Pistor, head of the animal pathology department at the university. More than 25 members were present from all over the state.

Committee reports were presented at the morning session. In the afternoon, featured speakers were:

Dr. B. P. Cardon, University of Arizona: "Nutrition of Small Animals."

Dr. W. E. Simonson, Tucson: "The Poultry Industry."

Drs. John Micuda and D. W. Hott, Phoenix: "Hormone Therapy in Small Animals."

G. A. Shetter, M. D., Tucson: "Eye Diseases and Injuries." Dr. Shetter also demonstrated the removal of cataract from a canine patient.

Dr. W. E. Merritt, Tucson, showed motion pictures of operations on dogs and cats.

Dr. J. G. Hardenbergh, AVMA secretary, Chicago, was a guest at the afternoon session and extended greetings from the Association and its officers.

In the evening, members, guests, and their wives attended a banquet at the Palomino Club at which motion pictures of the Arizona-Utah football game were shown.

The new officers elected at the business session were: Dr. D. W. Hott, Phoenix, *president-elect*, and Dr. Robert E. McComb, Jr., Phoenix, *secretary-treasurer*. The three members of the executive board are Dr. Paul F. McQuown, Tucson, Dr. F. D. McMahon, Phoenix, and Dr. K. O. Lassen, Mesa.

s/ROBERT E. MCCOMB, JR., *Secretary-treasurer*.

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**Amendments of Veterinary Practice Act Proposed.**—Agitation for drastic changes in the Arizona Veterinary Practice Law by farm bureau representatives has resulted in the introduction of a bill (H.B. 36) in the state legislature which would have the effect of eliminating examinations by the Board of Veterinary Examiners and would require only that an applicant furnish "satisfactory evidence that he has graduated from a veterinary medical school accredited by the American Veterinary Medical Association and that he has not been convicted of a felony, and pay to the board a fee of ten dollars, which shall not be refunded. The board, if satisfied that the allegations made in the application are true, shall issue a license."

The state association is opposing the bill and the state veterinary examining board, in letters to the press, has pointed out that allegation of operating a "closed shop" are contrary to the facts. Instead, the board has repeatedly made efforts to establish newly licensed veterinarians in sections of the state badly needing veterinary practitioners and has been successful in several instances. However, the board further points out that less than one-third of the graduate veterinarians taking the examinations in recent years have finally located in the state.

This situation obviously poses a problem for those states having small veterinary populations and where the war has brought about an increased appreciation of, and demand for, more veterinary services in areas not having graduate veterinarians located within convenient distances.

### Arkansas

**Increasing Interest in Milk Control.**—Milk inspectors of Little Rock headed by Dr. T. M. Dick, director of milk control, recommended 15 distributors of pasteurized milk and ten of raw milk for approval by the city health officer. The publication of their names in the

newspapers indicates the progress being made toward purifying the milk supply of the capital city.

S/FRANK HURLBUT, Yellville.

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**Plan to Acquire a Veterinarian.**—The *Mountain Echo* of Marion County tells the dairy farmers of that county that they should subsidize a veterinarian by taxing themselves 4 cents for every 100 lb. of milk they deliver to the cheese factory and therefore offer inducement to a capable man to settle in the county to treat brucellosis, tuberculosis, and mastitis.

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**Board of Health versus Dairymen.**—The State Board of Health has brought suit against five Jonesboro dairymen to enjoin them from selling raw milk until their herds have been tested for brucellosis. A special chancellor has been named to hear the suit. The outcome, which is sure to be favorable on the longtime pull, is less important than the obstacles public health officials have to break through in protecting human health. The intention to extend the brucellosis program to other counties where there are no competent veterinarians will also reveal the shortage of that class of much needed personnel. Animal plagues are apt to put this state in a dangerous position, as this keep-hands-off-my-infected-animals fighting front quite clearly shows.

S/FRANK HURLBUT, Yellville.

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**Far-Seeing American Legion.**—The Legislative Committee of the American Legion of the state, in sponsoring a bill before the legislature "to expand facilities and improve educational opportunities for veterans, particularly in dentistry, veterinary medicine, and pharmacy," was obviously moved by services which left a deep impression on the GI's during critical periods of the war. That medicine *per se* will take care of itself, but that good teeth and wholesome rations can be side-tracked in peacetime is obviously uppermost in the minds of the sponsors. Looks like the shortage of veterinarians in the state is leading to a breakdown in livestock disease control, says Dr. Frank Hurlbut of Yellville.

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**Dairy Industry Booming.**—The Milk Industry Foundation (New York) has announced that the state's 480,000 cows are producing an annual income of more than \$24 million for Arkansas farmers. Last year's production was 695,150,000 qt. of fresh milk, 6,417,000 lb. of butter, 7,812,000 lb. of cheddar cheese, and 2,774,000 gal. of ice cream.

S/FRANK HURLBUT, Yellville.

## California

**Animals Better Patients than Man.**—Resident State Secretary John L. Tyler, of Whittier, who once practiced human medicine, speaks from experience when he pronounced animals better patients than human beings, says *Western Livestock Journal* in reporting the important events of the three-day veterinary conference held at San Luis Obispo in January. It also points

out that Dr. Tyler is 77, retired, one of the pioneer veterinarians of the state, and a graduate of the Chicago Veterinary College (1891) and of the Barnes Medical College, St. Louis (1893). Animals are better patients because they don't read "doctor books" and diagnose their own ills, quotes the reporter. Veterinarians from coast to coast will be delighted to know that the "gentleman from California" who has represented organized veterinary medicine on the Coast untiringly for half a century is still Tyler, the philosopher, in any company.

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**State Veterinary Conference.**—The thirtieth annual veterinary conference sponsored by the California State Veterinary Medical Association was held at California Polytechnic School, San Luis Obispo, January 6-8, 1947. Over 200 veterinarians from all over the state and from surrounding states were registered. Special lecturers on the program included the following:

Dr. E. A. Benbrook, Iowa State College, Ames: "Diagnosis of Parasitism by Examinations of the Feces and Skin," "Demonstration of Postmortem Technique," and "Recent Advances in Parasite Control."

Dr. E. A. Ehmer, Seattle, Wash.: "Fracture Treatment by Bone Pinning" (illustrated)—(see the JOURNAL, January, 1947, pp. 14-19.), and "Some Problems in Small Animal Practice."

Dr. K. F. Meyer, Hooper Foundation, University of California: "Rickettsial Diseases."

Dr. I. E. Newsom, Colorado A. and M. College, Ft. Collins: "Some New Developments in Our Knowledge of Sheep Diseases."

Dr. L. R. Vawter, University of Nevada, Reno: "Bacillary Hemoglobinuria of Cattle and Sheep."

Other program contributions were made by:

Dr. E. E. Clemens, Hayward: "Some Suggestions of Doubtful Interest and Problematical Value."

Dr. W. R. Hinshaw, University of California, Davis: "Diseases of Turkeys."

During the meeting, a number of motion pictures on selected clinical and surgical subjects were shown.

An adjourned meeting of the state association was held on the evening of January 6. Action was taken to increase the annual dues of members to \$25.00, looking toward the employment of a full-time secretary. At this meeting, Dr. A. K. Carr, administrator of the Division of Animal Industry, Sacramento, discussed the features of the new brucellosis control law as it affects the participation of veterinary practitioners in the state program. AVMA Secretary Hardenbergh discussed briefly the plans for the 1947 and 1948 conventions, the latter to be held in San Francisco. Dr. George H. Hart and Col. Robert J. Foster spoke in behalf of the AVMA Research Fund.

The annual banquet was held on the evening of January 7, at which Dr. K. F. Meyer was the principal speaker and was presented with honorary membership in the state association with fitting remarks by Dr. C. M. Haring (see following item).

The current officers of the state association

are: Dr. E. G. LeDonne, Oakland, *president*; Dr. C. H. Reid, Hollywood; Dr. S. T. Michael, San Francisco; and Dr. F. P. Wilcox, Los Angeles, *first, second, and third vice-presidents*, respectively; Dr. F. H. White, San Rafael, *secretary*; and Dr. O. A. Longley, San Francisco, *treasurer*.

The program committee for the conference comprised Drs. N. H. Casselberry, C. M. Haring, C. H. Kenaston, A. M. McCapes, S. T. Michael, and W. K. Riddell.

S/ FLOYD N. WHITE, *Secretary*.

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**Dr. K. F. Meyer Honored by State Association.**—At the annual banquet of the California State Veterinary Medical Association held at the California Polytechnic School, San Luis Obispo, on Jan. 7, 1947, Dr. K. F. Meyer, director of the Hooper Foundation, University of California, was presented with honorary membership in the association. Dr. Meyer was the principal speaker and, following his address, the following citation was read by Dr. C. M. Haring, head of the Division of Veterinary Science, University of California:

"This is the thirtieth anniversary of the California Veterinary Conference. At each session up to 1942, the name of Karl Frederick Meyer has been listed among the special lecturers with the exception of the one year he was absent in Europe. During World War II, he has been a key figure in one of the greatest and most successful scientific efforts of all time and his absence from the conference has been a matter of great regret.

At the time of the first conference in December, 1916, Dr. Meyer had already attained recognition as an outstanding scientist, and soon thereafter a star was prefixed to his name in *American Men of Science*, indicating, in the opinion of his colleagues, that he deserved to rank among the ten leading pathologists and bacteriologists in America.

In recent years he has become recognized as a world authority on anaerobes, brucellosis, sylvatic plague, psittacosis, neurotropic viruses, and intercommunicable diseases of man and animals. He has received degrees, medals, lectureships, and other honors from many American and European Universities and societies. A few years ago, he was elected a fellow of the National Academy of Sciences, which was chartered by Congress and approved by President Lincoln in 1863, and comprises a group of famous men to be scientific leaders of the nation in peace and war, to initiate, direct, foster, and conduct organized measures for national prosperity, better health and higher standards of living, and also to develop and hold in readiness measures for the national defense. Perhaps Abraham Lincoln foresaw that, if necessary for national preservation, such measures could and would be used for the most terrible destruction the world has ever known.

It is now my distinction, in behalf of the California State Veterinary Medical Association, to participate in recognizing and appreciating the benefits and kindness of Dr. Meyer ever since he came to California in 1913. The association as a whole has benefited, but particularly the many individual members who have received his ever generous help and coop-

eration. This certificate of honorary membership as a token of appreciation is small indeed compared to the world wide honors already bestowed upon him, but we like to believe it indicates high regard, admiration, and affection unsurpassed by the members of the other organizations who have sought to honor him. At a meeting of the California Veterinary Medical Association held the sixth day of January, 1947, it was unanimously voted to grant an honorary membership to Karl Frederick Meyer, D.V.M., Ph. D., M.D., LL.D. We have the honor to present to him this certificate of honorary membership."

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**Southern California Association.**—The monthly dinner meeting of the Southern California Veterinary Medical Association was held on January 22 in Los Angeles. The program for the evening included a report on the state meeting, a discussion of the new state brucellosis program, and the new plans for the state association.

The following officers were installed: Dr. R. H. Scofield, *president*; Dr. Rollin R. Smith, *first vice-president*; Dr. K. P. Wilcox, *second vice-president*; and Dr. A. M. Scott, *secretary-treasurer*.

S/A. M. SCOTT, *Secretary*.

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**Beach Returns from China.**—Dr. J. R. Beach, professor of veterinary science, California College of Agriculture, has returned from a ten-month sojourn in China where he participated in a mission to aid Chinese agriculture by setting up a modern service for the control of animal diseases. Dr. Beach was one of a group of American veterinary scientists employed by the Chinese government to establish the biological laboratories, personnel, and other agencies required to build up the veterinary service of a large agricultural country. The Canadian-American wartime research on rinderpest has figured prominently in the basic plan of putting a prop under the suffering agriculture of 400 million people. Veterinary practice as known in Occidental countries has not existed in China.

S/JOHN L. TYLER, *Whittier*.

## Georgia

**Personal.**—Dr. Paul Ambery (MSC '40) has resigned from the U.S. BAI in South Carolina to establish a general practice in Atlanta.



Dr. Paul Ambery's Veterinary Medical Building.

His new veterinary medical building has just been completed at 1400 Howell Mill Road, N.W., and he invites all veterinarians who have the opportunity to do so to visit his hospital.

## Illinois

**Chicago Association.**—Dr. M. A. Emmerson, professor and head of veterinary obstetrics at Iowa State College, Ames, was guest speaker at the January 14 meeting of the Chicago Veterinary Medical Association. His subject was "Roentgen Therapy."

Newly elected officers for the association are: Dr. M. J. Skala, Highland Park, *president*; Dr. W. A. Young, Chicago, *vice-president*; Dr. R. C. Glover, Evanston, *secretary-treasurer*; and Dr. J. G. Hardenbergh, Chicago, *chairman*, board of censors.

All members with 100 per cent attendance for 1946 were the guests of retiring President R. L. Trader at a sillfrukost and smorgasbord at the Swedish Club of Chicago on February 2. Other members of the association also attended.

s/R. C. GLOVER, *Secretary*.

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**Personal.**—Dr. J. V. Lacroix, Evanston, Ill., was named "veterinarian of the year" (1946) in a poll conducted by the Gaines Dog Research Center, New York, N. Y. Several other "of-the-year" winners were announced and, according to Gaines, the ballots were cast in each case by colleagues in the winner's field.

## Indiana

**Officers.**—The Indiana Veterinary Medical Association, at its annual meeting on Jan. 16-18, 1947, elected Dr. George L. Clark of Columbia City as *president* for the coming year; Dr. Charles C. Dobson, New Augusta, *vice-president*; Dr. Henry A. Lidikay, Darlington, *secretary-treasurer* (re-elected); and Drs. M. M. Coble, Columbia City, and Robert Oldham, Kokomo, *directors*.

## Iowa

**East Central Society.**—Forty-two veterinarians from 15 counties attended the January 9 dinner meeting of the East Central Iowa Veterinary Society held in Cedar Rapids. Dr. Iva Dunn, of Atkins, gave a case report on chemical poisoning of cattle; Dr. R. M. Hoffer, of Cedar Rapids, presented a comprehensive paper on streptococcal infections of swine; and Dr. M. W. Wallinga, Cedar Rapids, told of his research in compounding a new anesthetic for Army horses. The meeting closed with a question box on general practice problems led by Dr. A. R. Menary, Cedar Rapids.

s/L. P. SCOTT, *Secretary*.

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**Nationwide Public Relations Program.**—The Associated Serum producers have launched one of the largest campaigns of public education in the history of veterinary medicine. Working through 3,206 newspapers, 356 radio stations, and leading farm and livestock publications from coast to coast, the campaign is channeled

toward a twofold goal: First, to make all animal owners more conscious of modern livestock diseases and the problems they present; and second, to teach owners that the best way to cope with these diseases is to rely upon the skilled advice and service of the local veterinarian.

News releases on livestock health problems will be issued every two weeks, illustrated articles will be sent to 2,241 county seat and weekly newspapers regularly, cartoons will go to leading dailies and weeklies in all states, and a special series of hog cholera messages and radio broadcasts will warn farmers of the danger of cholera and will point to the fact that for dependable protection the owner should always have a veterinarian do his vaccinating.

The series "What the Veterinary Profession Means to Mankind" will be continued, and it is estimated that this feature reaches more than 6.8 million families with each issue. It emphasizes the fact that a greater livestock industry is based on sound principles of applied veterinary science.

## Kansas

**Junior Chapter.**—Officers have been elected for the spring semester in the Kansas State College junior chapter of the AVMA. Ansel B. Tarrant, of Bucklin, is the new *president*; Joseph T. McGinity, Manhattan, *vice-president*; Peter C. Kennedy, Berkeley, Calif., *secretary*; Lyle T. Boley, Topeka, *critic*; C. Kenneth Jewell, Upper Montclair, N. J., *treasurer*; and David O. Mackintosh, Manhattan, *marshall*.

s/R. R. DYKSTRA,

*Dean, School of Veterinary Medicine.*

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**Power Sprayers.**—The War Department has placed 15 additional power spraying machines on loan for use in Kansas insect and weed control demonstrations. In the fall of 1943 when the extensive control program was started, there were three power sprayers in use compared to 255 machines now in use. In 1946, more than 750,000 cattle were sprayed for lice and grubs and 1,356,000 head for flies.

## Louisiana

**Annual Meeting and Short Course.**—The sixteenth annual short course and meeting of the Louisiana Veterinary Medical Association were held in Baton Rouge on Jan. 29-30, 1947. Following an address of welcome by Dean Fred C. Frey of the Louisiana State University, and the response by Dr. W. J. Gray of Thibodaux, the association president, Dr. A. V. Young, addressed the general assembly. The program continued with the following speakers.

Dr. W. L. Boyd, University of Minnesota, St. Paul: "Infertility of Farm Animals."

Dean J. G. Lee, Jr., College of Agriculture, Louisiana State University: "The Veterinarian and Southern Agriculture."

Dr. Clara Tucker, Department of Home Economics, Louisiana State University: "Some Problems of the Consumers."

Dr. D. A. Eastman, Miami, Fla.: "Practical Points on Treatment of Eye, Ear, Nose, and

Throat Diseases," and "Clinical Management of the Genito-Urinary Tract in Dogs."

Dr. Ira D. George, Department of Zoölogy, Louisiana State University: "Battling Brucellosis" and "Meats with Approval," USDA films; "Skeletal Fixation by the Stader Splint: Fractures of the Tibia. Fractures of the Os Calcis-A." (U. S. Navy training film.)

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, Ill.: "Mastitis."

Dr. R. L. Mayhew, Department of Veterinary Science, Louisiana State University: "Some Recent Results of Experiments on Gastrointestinal Parasites of Cattle."

Dr. W. L. Boyd, University of Minnesota, St. Paul: "Artificial Insemination in Cattle Breeding and Its Relation to the Practitioner." Dr. Boyd was also moderator in a panel on mastitis. Participants in the panel were Dr. K. W. Franks, Minden; Dr. R. C. Klussendorf, Chicago, Ill.; Dr. A. V. Young, Shreveport; Dr. W. S. Hornsby, Lafayette; and Dr. T. C. Kirby, Ruston.

At the banquet held at the Heidelberg Hotel, the toastmaster was Dr. Will S. Hornsby, of Lafayette. Speakers for the evening were Dr. R. C. Klussendorf, of the AVMA, and Mr. Bernie Moore, the head coach at Louisiana State University.

A barbecue lunch for members and their wives was supervised by Mr. R. M. Crown, of the Department of Animal Husbandry at the Louisiana State University.

### Massachusetts

**Annual Meeting.**—The Massachusetts Veterinary Association held its annual meeting on Jan. 22, 1947, at the Hotel Statler in Boston. The afternoon program featured Dr. L. Reddin, Jr., Merck and Co., Rahway, N. J., who spoke on "Some Aspects of Antibiotics in Veterinary Medicine." The dinner speaker was Dr. A. G. Danks, professor of surgery at the New York State Veterinary College, Ithaca, N. Y. His subject was "Some Surgical Diseases of the Bovine Animal."

s/E. A. WOELFFER, Acting Secretary.

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**Personal.**—Dr. E. A. Woelffer, of Melrose, is the new president of the Mutual Benefit Association, H. P. Hood and Sons, Boston. Dr. Woelffer was general secretary for the Committee on Local Arrangements at the 1946 AVMA convention at Boston.

### Michigan

**Dean Giltner Retires.**—Dean Ward Giltner, of the School of Veterinary Medicine at Michigan State College, will retire from the faculty after thirty-eight years of service to the college. He joined the staff as a research worker in bacteriology in 1908 and, in 1923, became head of the veterinary division, which later became a school when basic college changes were made in 1943. He has also been head of the Department of Bacteriology and Hygiene. Dr. Giltner received his D. V. M. degree from Cornell University in 1906, the master of science degree from Alabama Polytechnic

Institute in 1908, and was awarded a D.P.H. degree from the University of Michigan in 1933. No successor has been appointed.

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**Conference for Veterinarians.**—The Institute of Short Courses, Michigan State College, conducted the twenty-fourth annual postgraduate conference for veterinarians Jan. 21-24, 1947. The following speakers participated in programs at Fairchild Theater, after greetings by Dean Ward Giltner of the School of Veterinary Medicine.

Dr. E. P. Reineke, Physiology Department, Michigan State College: "Application of Hormone Discoveries to Veterinary Problems."

Dr. S. F. Scheidy, Sharpe and Dohme, Inc., Philadelphia, Pa.: "Newer Sulfa Drugs" and "Newer Antibiotic Information;" discussion by Drs. I. F. Huddleson and H. J. Stafseth.

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, Ill.: "The Veterinarian in the Postwar Era" and "The Function of the Junior AVMA."

Dr. C. H. Cunningham, Bacteriology Department, Michigan State College: "Newcastle Disease."

Dr. H. J. Stafseth, Bacteriology Department, Michigan State College: "Observations in China."

Dr. R. D. Hatch, Pathology Department, Michigan State College: "Sterility Problems in Cattle;" discussion by Dr. D. J. Ellis, Dr. C. F. Huffman, and Mr. W. W. Snyder.

Dr. S. J. Roberts, Cornell University, Ithaca, N. Y.: "Common Cattle Diseases" and "Ambulatory Clinic Problems."

Dr. L. D. Frederick, Swift and Co., Chicago, Ill.: "Selected Sheep Diseases."

Dr. H. P. Eames, Manchester: "The Shore Farms Poultry Project."

Dr. C. F. Clark, state veterinarian, Lansing: "Bang's Disease Administrative Problems."

During two days of the conference, the veterinary and bacteriology laboratories were opened to groups attending the conference. Demonstrations and consultations were held in the following kinds of work: dairy bacteriology laboratory, Dr. A. L. Bortree, in charge; parasitology laboratory, Dr. P. A. Hawkins, in charge; bacteriology laboratory, W. L. Mallmann, in charge; poultry clinic, Drs. H. J. Stafseth and C. H. Cunningham, in charge; leptospirosis, Dr. J. P. Newman, in charge; clinical pathology laboratory, Dr. L. B. Sholl, in charge; central Brucella station, Dr. G. R. Bennett, in charge; and mastitis laboratory, Dr. C. S. Bryan, in charge.

### Minnesota

**Officers.**—Dr. E. H. Gloss, of Gaylord, was elected president of the Minnesota State Veterinary Medical Society at its annual meeting, Jan. 6-8, 1947. Other officers for 1947 are: Dr. R. Fenstermacher, St. Paul, *president-elect*; Dr. C. H. Haggard, Luverne, *first vice-president*; Dr. R. O. Rydell, Wheaton, *second vice-president*; and Dr. H. C. H. Kernkamp, St. Paul, *secretary-treasurer*. Dr. Don Spangler, Atwater, was named to the board of trustees.

## Missouri

**St. Louis Association.**—The February 7 meeting of the St. Louis District Veterinary Medical Association featured as the speaker Dr. W. C. Schofield, poultry pathologist, Ralston Purina Company, St. Louis. His subject was "What the Veterinarian Can Do for the Poultry Industry."

s/C. W. DARBY, *Secretary*.

**Kansas City Association.**—The annual banquet and social meeting of the Kansas City Veterinary Medical Association was held at Olathe on Jan. 28, 1947. Dr. J. L. Jones, of Blackburn, officiated as master of ceremonies; and Mr. Fred Olander, Kansas City stockyards official, was the after-dinner speaker. New officers were installed, and music and color films rounded out the evening's entertainment.

s/GAIL B. SMITH, *Secretary*.

## Nebraska

**Public Relations in Nebraska.**—The Nebraska State Veterinary Medical Association, aided by material from the central office of the AVMA, has received, in the past few months, "the greatest volume of ethical publicity" in the history of the association. On January 6, the *Lincoln Journal* farm section featured interviews with 12 veterinarians attending the fiftieth annual convention in December. The same issue carried a story on the addition of a veterinarian to the state health department staff, with an informative article on the fields which his services would cover.

Dr. Paul L. Matthews, Omaha, public relations chairman for the state association, writes: "I might add that so far we have not been able to get organized on the radio programs provided by the AVMA, but we are working along this line and hope to be able to take advantage of this nice material in the near future."

## New Jersey

**Annual Meeting.**—The Veterinary Medical Association of New Jersey held its sixty-third annual meeting in Newark on Feb. 6-7, 1947. Following President J. A. S. Millar's address, participating speakers were:

Dr. H. J. Jenne, Brucellosis Control Division, New Jersey Bureau of Animal Industry: "Calhood Vaccination in New Jersey's Brucellosis Control Program."

Dr. H. G. Newton, Washington, N. J.: "Public Health Report."

Dr. L. W. Goodman, Manhasset, N. Y.: "Some Clinical Indications for Penicillin Therapy."

Dr. R. A. Kelser, School of Veterinary Medicine, University of Pennsylvania, Philadelphia: "Veterinary Preventive Medicine."

Dr. B. T. Simms, U. S. BAI, Washington, D. C., and president of the AVMA: "Diseases of Calves."

Dr. R. A. Hendershott, New Jersey Bureau of Animal Industry: "Report of AVMA Delegation."

Dr. Tevis M. Goldhaft, Vineland Poultry Laboratories: "Some Manifestations of Newcastle Disease Encountered in Practice."

Dr. C. R. Schroeder, Lederle Laboratories, Pearl River, N. Y.: "Species Differences in the Rate of Excretion of Seven Sulfonamids."

Dr. Donald W. Baker, Cornell University, Ithaca, N. Y.: "Mange and Scabies in Cattle."

Dr. G. B. Schnelle, Angell Memorial Animal Hospital, Boston, Mass.: "A Clinical Consideration of Convulsions in Dogs."

Eugene M. Katzin, M. D., Newark: "Laboratory and Clinical Aspects of the Rh Factor."

Dr. J. S. McDaniel, Rabies Control, New Jersey Department of Health: "Dealing with Rabies in New Jersey During 1946."

s/J. R. PORTEUS, *Secretary*.

**Farmer's Week.**—The seventy-fifth annual New Jersey Farmer's Week was held at Trenton from Jan. 20-25, 1947. Every phase of the state's agricultural life was emphasized in the five-day program for farmers and their families.

Dr. J. A. S. Millar, president of the Veterinary Medical Association of New Jersey, presided at the livestock and dairy session on January 23. Featured on the program were Dr. Herbert J. Metzger, of the Agricultural Experiment Station at New Brunswick, who spoke on brucellosis research; Dr. Herbert J. Jenne, of the Brucellosis Division, Department of Agriculture, who spoke on brucellosis control; and Dr. E. A. Churchill, of the University of Pennsylvania, Philadelphia, whose subject was "Sterility in Cattle."

**Canadian Grade Cattle Barred.**—To be certain that Canadian cattle brought into New Jersey originate in accredited herds or accredited areas, the state has restricted Canadian importations to purebreds, as of Nov. 1, 1946.

According to State Veterinarian R. A. Hendershott, a fairly high percentage of grade cattle coming from Canada were found to react to the tuberculin test.

## New Mexico

**Intercity Meeting.**—Veterinarians of Santa Fe and Albuquerque met in Albuquerque on January 10 for a dinner and round-table discussion of practice problems. Fourteen attended the meeting, and it was decided to continue these gatherings each month by rotating the meeting place between the two towns.

s/A. A. WIEST, *Secretary*.

## New York

**New York City Association.**—Dr. Mark Allam, assistant professor of veterinary surgery at the University of Pennsylvania, was guest speaker at the February 5 meeting of the New York City Veterinary Medical Association. His subject was "Perineal Herniorrhaphy" illustrated by a motion picture in technicolor.

s/C. R. SCHROEDER, *Secretary*.

## North Carolina

**Conference for Veterinarians.**—Approximately 100 veterinarians attended the ninth annual conference for veterinarians held at North Carolina State College, Raleigh, Jan. 28-30, 1947. The following speakers participated in the program:

Dr. Frank Breed, Norden Laboratories,

Lincoln, Neb.: "A Swine Sanitation Program," "Swine Erysipelas," and "Baby Pig Diseases." Dr. Breed also conducted the swine clinic.

Dr. A. H. Groth, Regional Animal Disease Research Laboratory, Auburn, Ala.: "Swine Brucellosis" and "The Program of the Regional Animal Disease Research Laboratory."

Dr. P. J. Brandly, Poultry Inspection Service, U. S. BAI, Washington, D. C.: "Poultry Inspection Service."

Prof. H. A. Stewart, Animal Genetics and Swine Research, North Carolina State College: "A Swine Breeding Program for North Carolina."

Prof. R. L. Lovvorn, Department of Agronomy, North Carolina State College: "Roughage Production for Healthy Animals."

Dr. J. L. Stansbury, The Ohio State University, Columbus: "Opportunities for the Veterinarian Through Herd Supervision" and "The Role of the Veterinarian in Artificial Insemination."

Dr. Donald W. Baker, New York State Veterinary College, Ithaca: "External Parasites of Cattle."

Dr. Mark Welsh, Lederle Laboratories, Pearl River, N. Y.: "Sulfonamide Blood Levels and the Use of Sulfamethazine."

Dr. F. M. Austin, Belcherstown, Mass.: "Surgery in Connection with a Small Town Practice" (illustrated with motion pictures).

Dr. D. F. Green, Merck and Co., Rahway, N. J.: "Use of Antibiotics in Veterinary Medicine."

s/J. H. BROWN, *Secretary*.

## Ohio

**Officers.**—At the annual meeting of the Ohio State Veterinary Medical Association held in Columbus on Jan. 8-10, 1947, the following officers were elected: Dr. A. G. Madden, Jr., *president*; Dr. G. W. Lies, *president-elect*; Dr. R. E. Rebrassier, *vice-president*; Dr. W. R. Hobbs, *treasurer*; Dr. F. J. Kingma, *secretary*; and Dr. N. H. Myers, *member of the executive board*.

s/F. J. KINGMA, *Secretary*.

**Personal.**—Dr. S. W. Stout (OSU '35) has announced the opening of the Kindness Pet Hospital on February 8 at 317 N. Erie Blvd., Hamilton.

**Personal.**—The Dr. Heinz Co. mill, Cincinnati, owned by Dr. W. C. Heinz, was completely destroyed January 4 by a \$300,000 fire. Despite the damage to the Cincinnati mill, which supplies feeds, supplements, and minerals to dealers and consumers, Dr. Heinz announced that arrangements had been completed with another mill to produce sufficient tonnage to meet current demands. The cause of the fire was undetermined.

**New Faculty Members.**—The following five new members have been added to the staff of the Department of Veterinary Medicine at The Ohio State University: Dr. Walter G. Venzke (ISC '35), assistant professor in preventive medicine in the research laboratories of the university at Reynoldsburg; Dr. R. E. Habel

(OSU '41), instructor in veterinary anatomy; Dr. Lloyd C. Ferguson (OSU '34), assistant professor of bacteriology; Dr. F. H. Fox (CORN '45), who has assumed temporary duties in large animal surgery; and Dr. William A. Bridenstine (OSU '42), assistant instructor in surgery.

Keep 'em Healthy Programs on Station WLW.—The radio programs entitled "Keep 'em Healthy," featuring veterinarians, have been



Mr. Roy Battles, director of the "Keep 'Em Healthy" radio broadcasts on Station WLW in Ohio.

sponsored by state and provincial associations and aired through the courtesy of various stations over the country and in Canada.

In Ohio, WLW has been generous with time for the series, and Mr. Roy Battles, WLW's farm director, "has been responsible for the tremendous amount of publicity for the veterinary profession in this vicinity, especially on the 'Everybody's Farm Hour' on Saturday," to quote from a letter from Dr. Fred J. Kingma, secretary of the Ohio State VMA.

Mr. Battles lives in Batavia, Ohio, just north of Cincinnati and drives every day to Mason for the 12:40 p. m. broadcast, where WLW's "Everybody's Farm" is located. He is in charge of the farm and of the farm programs broadcast from there. A graduate of The Ohio State University with a major in horticulture, the farm is Mr. Battles' avocation as well as his vocation.

## Oklahoma

**State Association.**—The thirty-second annual meeting of the Oklahoma Veterinary Medical Association was held in Oklahoma City on Jan. 13-14, 1947. Following the address of President J. P. Denton, the following speakers appeared on the program.

Dr. Raymond Butler, Oklahoma A. & M. College, Stillwater: "Avian Pneumoencephalitis."

Dr. I. F. Huddleson, Michigan State College, East Lansing: "Preliminary Results from the Immunization of Cattle against Bovine Brucellosis by Means of Brucella Mucoid Phase Vaccine."

Dr. W. C. McConnell, Holdenville: "A Digest of Every Day Aids in Practice."

Dr. A. H. Quin, Jensen-Salsbery Laboratories,

Inc., Kansas City, Mo.: "Anthrax—Its Diagnosis, Prevention, and Control." Dr. Quin also led a forum and panel discussion.

Dr. L. D. Jones, Swift and Co., Chicago, Ill.: "Care of Small Animals in Confinement."

Dr. W. A. Hagan, dean, New York State Veterinary College, Ithaca: "Virus Diseases of Animals."

Dr. H. T. Cartrite, Oklahoma City: "A Symposium on Canine Practice."

Dr. W. E. Irwin, Phillips Petroleum Co., Bartlesville: "Fowl Paralysis—Leucosis and Possibilities of Poultry Practice in Oklahoma."

In conjunction with the meeting were a well-attended banquet and the business meeting and luncheon of the ladies auxiliary.

The officers for the coming year are: Dr. N. L. Astle, Blackwell, *president*; Dr. R. T. Fisher, Stillwater, *vice-president*; and Dr. D. B. Pellette, Oklahoma City, *secretary-treasurer*.

S/D. B. PELLETTE, *Secretary*.

## Oregon

**Quarterly Meeting.**—The regular meeting of the Oregon State Veterinary Medical Association was held at Silverton on January 11 with Dr. E. L. Henkle as host.

Dr. Huthman, of Portland, reported on his visit to a state dairyman's association meeting and listed several items of constructive criticism of the veterinarian by the dairyman. Several other papers were presented by the members.

It was decided to invite at least one member of one of the state livestock associations to each meeting of the Oregon association. Plans were completed to arrange for representation at the legislature sessions in which matters relating to the veterinary profession are to be presented.

S/WALTER W. WELLER, *Secretary*.

## Pennsylvania

**Keystone Association.**—The Keystone Veterinary Medical Association met at the University of Pennsylvania Veterinary School on January 29. Speaker for the evening was Dr. William J. Lentz, professor of veterinary anatomy, whose subject was "Canine Heart Affections."

S/RAYMOND C. SNYDER, *Secretary*.

**Department of Biochemistry.**—Plans have been completed for the establishment of a new department of biochemistry at the University of Pennsylvania veterinary school. Dr. James H. Jones, who has been teaching physiological chemistry to veterinary students for a number of years, has been appointed professor and head of the new department.

An outstanding physiologist, Dr. Frederick H. McCutcheon, formerly professor of physiology at the University of North Carolina, will head the Department of Physiology.

**Personal.**—Dr. Elias T. Booth (UP '09) was honored at the University of Pennsylvania Founder's Day on January 18. He was one of eight graduates who received alumni awards

of merit because of "outstanding service to the University during the recent past."

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**Personal.**—Dr. James F. Shigley, who has been a member of the State College Board of Health for twenty years, was appointed on January 1 to an additional five-year term. Dr. Shigley is also president of the State College Rotary Club.

## Tennessee

**New Officer.**—At a recent meeting of the Tennessee Veterinary Medical Association, Dr. H. W. Nance of Lawrenceburg was elected secretary-treasurer of the association.

S/A. C. TOPMILLER.

## Texas

**Personal.**—Dr. Dee Pearce (MCK '08), Leonard, was seriously burned by explosion of some gasoline equipment being used in his practice on Jan. 9, 1947. At the end of January, the doctor was in Veterans' Hospital at McKinney, Texas, undergoing blood transfusions and skin grafting. Dr. Pearce was secretary-treasurer of his state association from 1926 to 1943.

## Utah

**Intermountain Association Meeting.**—The nineteenth annual meeting of the Intermountain Veterinary Medical Association was held at the Hotel Utah, Salt Lake City, Jan. 13-15, 1947, Dr. W. T. Huffman, president, presiding. About 75 veterinarians, principally from Utah, Idaho, Montana, Wyoming, and Nevada, were in attendance.

The featured speakers on the three-day program were:

Dr. E. A. Benbrook, Iowa State College, Ames: "Recent Advances in Parasite Control" and "Postmortem Technique."

Dr. O. L. Osteen, U.S. BAI, Washington, D. C.: "Equine Encephalomyelitis" and "Newcastle Disease."

Dr. J. T. Ryff, University of Wyoming, Laramie: "Blackleg Immunization."

Dr. H. E. Kingman, Sr., Wyoming Hereford Ranch, Cheyenne: "The Placenta of the Cow" (illustrated).

Dr. H. E. Kingman, Jr., Wilson & Co., Chicago: "Animal Health As It Affects the Livestock and Meat Industry."

Dr. Frank M. Wilson, Mechanicsville, Iowa: "Swine Practice in the Corn Belt" and "Observations in Cattle Practice."

Dr. E. A. Tunnicliff, Montana State College, Bozeman: "Blood Sedimentation Rate as an Aid in the Diagnosis of Infectious Anemia in Horses."

Dr. L. L. Madsen, Utah State Agricultural College, Logan: "The Vitamin B Complex in Swine Nutrition."

Dr. E. A. Tugaw, Ogden, Utah: "Some Problems in Small Animal Practice."

AVMA Secretary J. G. Hardenbergh, Chicago, spoke on "The Research Program of the AVMA."

Hon. Earl J. Glade, mayor of Salt Lake City, made a thoughtful address of welcome stressing

the natural resources of the intermountain region of which the city is the metropolis and pointing out the importance of livestock production and competent veterinary service to the economic and public health welfare of the people in the area. In response, Dr. W. H. Hendricks, former state veterinarian, reviewed the professional and educational status of the veterinary service and emphasized the need for more and better trained personnel in the expanding fields open to veterinary graduates.

On the evening of January 13, three informal discussion groups were conducted with chairmen as follows: practitioners—Dr. F. R. Mencer, Ogden; research workers—Dr. Glenn C. Holm, University of Idaho, Moscow; regulatory workers—Dr. F. H. Melvin, U.S. BAI Inspector-in-charge, Salt Lake City. In addition, Dr. J. C. Flint, Salt Lake City, entertained a large group of veterinarians at his small animal hospital for discussion of small animal topics.

A question box was conducted by Dr. Wayne Binns, Utah State Agricultural College, on the afternoon of January 14, which was participated in by the program speakers and others.

The annual banquet of the association on the night of January 14 was a most enjoyable occasion, Dr. W. H. Hendricks serving as toastmaster. An excellent floor show of local talent was presented and Dr. E. A. Benbrook gave an illustrated talk on the Minnesota lake region. This was followed by dancing at a local "spot".

The Ladies' Auxiliary had a full program and elected the following officers: Mrs. D. A. Osguthorpe, Salt Lake City, *president*; Mrs. F. H. Melvin, Salt Lake City, *first vice-president*; Mrs. Phil H. Graves, Idaho Falls, Idaho, *second vice-president*; and Mrs. O. G. Larsen, Logan, *secretary-treasurer* (re-elected).

The officers of the association for the ensuing year are: Dr. K. K. Shott, Buhl, Idaho, *president*; Dr. Wayne Binns, Logan, Utah, *first vice-president*; Dr. Glenn C. Holm, Moscow, Idaho, *second vice-president*; Dr. John W. Chambers, Jr., Garland, Utah, *third vice-president*; and Dr. M. L. Miner, Logan, Utah, *secretary-treasurer* (re-elected).

S/M. L. MINER, *Secretary-Treasurer*.

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## FOREIGN

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### Austria

**Dourine Outbreak.**—Dourine, kept out of Austria for sixty years, made its appearance there last summer, according to a report just published in *The Journal of the Royal Army Veterinary Corps*. The outbreak is described as serious, with the original source of infection dating back almost two years.

In the fall of 1944, many refugees passing through the districts of Gmund and Tulin, where the dourine outbreak occurred, left horses behind them which are believed to have introduced the disease. During April, 1945, German and Hungarian troops passed through these districts, and in May, 1945, mounted Russian troops occupied the area.

### England

**Canine Disease Research.**—Plans recently announced by the Veterinary Educational Trust, of which W. R. Wooldridge is scientific director, call for the establishment of a canine disease research station in southern England. Primary financial backing for the project comes from the National Greyhound Racing Society, which will contribute £10,000 annually for seven years.

An equine disease research center is already being organized at Newmarket, and the Trust expects to set up other stations where needed, in order to stimulate original research and to offer careers to veterinarians who wish to specialize. An estimated annual income of £100,000 will be needed to carry out the Trust's expanded program, which includes research fellowships. Sources of revenue are individual and group donations and auction of nominations for Thoroughbred sires. An extra charge on race cards at some of the important tracks is a possible additional source of revenue.

### Germany

**Veterinary Corps Aids Public Health.**—Large-ly through the efforts and leadership of the U. S. Army Veterinary Corps, the German people are getting the serums and vaccines needed to protect their health. The Veterinary Corps officers took control of production at the Behring Werke in June, 1945.

Located just outside Marburg, the Behring Werke was probably the first factory in Germany to achieve 100 per cent production following the war. In March, 1945, Lt. Col. Richard A. Huebner was sent to Marburg to survey the plant, which was founded by Emil von Behring, Nobel prize winner for his work on serum extraction. Though not bombed or shelled, it was unable to produce due to lack of supplies, and the workers were abandoning their jobs. Horses, cattle, and sheep used in production were dead or dying.

Two months after the survey was made, Huebner was assigned to supervise the plant. Soon he and an assisting veterinary officer had production running at full speed. About 450 civilians, including physicians, veterinarians, chemists, and laboratory workers, were employed, and additional animals were obtained.

Total production of the Behring Werke, which became a part of the vast Farben industries in 1930, goes to the German people. Profits are held by the military government for future disposal.

### Italy

**Congress of Animal Reproduction.**—Plans are under way at Milan for the first International Congress of Physiopathology of Animal Reproduction and Artificial Insemination, which will be held there in April of 1948. Sponsored by the Milan University, the work of the Congress will be divided into the following sections: (1) general biology; (2) applied genetics; (3) morphology and physiology of reproduction; (4) pathology of reproduction; (5)

artificial insemination; (6) breeding and feeding; and (7) economic, organizational, and legislative problems.

Leading Italian and foreign scientists compose the standing committee. Professor Telesforo Bonadonna, director of "Istituto Sperimentale Italiano—L. Spallanzani," University of Milan, is general secretary of the Congress.

S/T. BONADONNA, Milan.

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**Bibliographical Bulletin.**—The International Association of Medical Press publishes at Milan the Bibliographical Bulletin, an index of current literature from the medical and chemical presses of all nations. The aim of the association is to "coördinate the medical press throughout the world and render it a vital element in the development and divulgation of medical culture," by facilitating exchanges and creating a basis of coöperation between the various contributors to its development—the pharmaceutical industry, the graphic industry, the paper industry, etc. The subscription rate to the new bulletin is \$2.00 per year to foreign countries.

S/SANTO VANASIA, Editor-Director.

## Poland

**Horses from UNRRA.**—The 100,000th horse was recently delivered to Poland by the UNRRA under a plan to provide 133,000 horses for this nation. Shipments came from the United States, Ireland, Canada, Denmark, and Iceland.

Poland lost around 2,700,000 horses during the war. Most of the replacements are brood mares.

## Yugoslavia

**Library Project.**—The American Friends of Yugoslavia is sponsoring a public health program in that country. As part of the project, the organization has purchased basic libraries for the three medical schools at the Universities of Zagreb, Ljubljana, and Belgrade. Books, journals, bulletins, or pamphlets suitable for the veterinary departments of these institutions will be gratefully accepted.

S/FLAVEL BARNES, Field Director.

## COMING MEETINGS

Northern Illinois Veterinary Medical Association. Hotel Faust, Rockford, Ill., March 26, 1947. Paul T. Gambrel, Winnebago, Ill., secretary.

American Animal Hospital Association. Tulsa, Okla., April 22-24, 1947. R. E. Ruggles, 901 19th St., Moline, Ill., secretary.

North Central Iowa Veterinary Medical Association. Waukonsa Hotel, Fort Dodge, April 24, 1947. B. J. Gray, Box 797, Fort Dodge, Iowa, secretary-treasurer.

American Society for the Study of Sterility. Hotel Strand, Atlantic City, N. J., June 7-8,

1947. John O. Haman, M.D., 490 Post St., San Francisco, Calif., secretary.

Ohio State University. Annual Conference for Veterinarians. College of Veterinary Medicine, Ohio State University, Columbus, June 11-12-13, 1947. Walter R. Krill, College of Veterinary Medicine, dean.

North Carolina State Veterinary Medical Association. Charlotte, N. Car., June 25-26, 1947. J. H. Brown, Tarboro, N. Car., secretary-treasurer.

American Veterinary Medical Association. Eighty-fourth Annual Session. Netherland Plaza Hotel, Cincinnati, Ohio, Aug. 18-22, 1947. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Eastern Iowa Veterinary Association, Inc. Hotel Montrose, Cedar Rapids, Iowa, Oct. 14-15, 1947. Laurence P. Scott, P. O. Box 325, Waterloo, Iowa, secretary.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. E. A. Woelffer, c/o A. P. Hood & Sons, Boston, Mass., secretary-treasurer.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Saint Louis District Meetings, Roosevelt Hotel, St. Louis, Mo., the first Friday of each month. C. W. Darby, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association. Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.



Scene in Eden Park, Cincinnati, convention city for 1947.

## VETERINARY MILITARY SERVICE

### Colonel Dildine: "Conscience" of the Market Center System

As headquarters veterinarian for the Quartermaster market center system throughout the war, Col. Seth C. Dildine held one of the most responsible and exacting jobs in the armed forces food-procurement organization. How capably he handled that position was told in letters of commendation from two prominent Washington generals, written on the occasion of his retirement from the Army at the close of 1946.

Major General T. B. Larkin, Quartermaster chief, pointed out how Colonel Dildine was able to organize and direct, with a maximum of efficiency, the vast veterinary force required for inspecting perishable foods at Quartermaster procurement and storage points all over the nation. More than \$3 billion worth of food products were purchased, stored, and shipped under the market center system while Colonel Dildine was on the staff; and largely because of the close check Colonel Dildine's force kept on spoilage in these products, only 0.005 per cent of the total purchases had to be disposed of as unfit for consumption. Because the Colonel's personal integrity was so high, he became known as the "conscience" of the market center system.

In like words of praise, Surgeon General Kirk commended Colonel Dildine for outstanding service to the Veterinary Corps and to the Medical Department.

### Veterinary Branch, Air Services

The Veterinary Medicine Branch continues as part of the Professional Division, Air Surgeon's Office. The veterinary officer performing duties in this branch does so in addition to his regular assignment as veterinarian with the Strategic Air Command, Andrews Field, Md. The officer functioning in this capacity is Col. James C. Barta, V. C.

The position as chief of this branch was dis-

continued due to an overall reduction in personnel. Col. Benjamin D. Blood held the post until Sept. 12, 1946, when he was separated from active duty. Major Harry A. Gorman was appointed to the position vacated in the Air Surgeon's Office until its discontinuation Nov. 8, 1946.

### Regular Army Integration Program

The appointment of Medical Department officers in the Regular Army was announced by the War Department Jan. 31, 1947. The grade of the veterinary officer in the list below is his permanent grade in the regular Army. His grade in the Army of the United States, National Guard, or Officers Reserve Corps, appears in parenthesis.

- Capt. (Lt. Col.) Clinton L. Gould, Eureka, Calif.
- Capt. (Capt.) Daniel P. Sasmore, Rio Linda, Calif.
- Capt. (Maj.) Nels F. Christensen, Cedar Falls, Iowa.
- Capt. (Capt.) Jack H. Hempy, Groveport, Ohio.
- 1st Lt. (Capt.) Henry M. Miller, Dayton, Ohio.
- Capt. (Capt.) Ralph D. Walters, Columbus, Ohio.
- Capt. (Maj.) Conley G. Isenberg, Chandler, Okla.
- Capt. (Maj.) Frank J. Davies, Swarthmore, Pa.
- Capt. (Capt.) John H. Harrison, New Castle, Pa.
- Capt. (Maj.) Everett B. Miller, Allentown, Pa.
- 1st Lt. (Capt.) William G. Brooks, Jefferson, Texas.
- Capt. (Lt. Col.) Seidel M. Stephens, Fort Worth, Texas.

### Army Food Inspection Program

The effectiveness of the Army Veterinary Corps food inspection program is attested by the fact that no serious, widespread outbreak of disease traceable to the issue of unwholesome meat, meat-food, and dairy products has occurred among United States Army troops in the past several years. Col. James A. McCallam, chief, Veterinary Consultants Division, Office of The Surgeon General, stated recently.

The Veterinary Corps, in a report for 1946, announced that it inspected and passed, at time of procurement by the Government, 1,368,412,978 lb. of foods of animal origin, while 40,042,009 lb. of food of animal origin were inspected and rejected at time of procurement for non-compliance with type, class, or grade, and 6,180,674 lb. of foods of animal origin were inspected and rejected at time of procurement as being insanitary or unsound.

These totals include inspections made for the Navy, Marine Corps, Coast Guard, and War Shipping Administrations, but do not



The Union Terminal Station, Cincinnati, railroad portal to 1947 convention.

include the billions of pounds of government-owned foods reinspectd in storage, during shipment, and at time of issue.

### New Director of Army Institute of Pathology

Major General Norman T. Kirk, The Surgeon General, recently announced that Col. Raymond O. Dart, M.C., has succeeded Col. James E. Ash, M.C., as director of the Army Institute of Pathology. Colonel Dart has practiced pathology for over twenty-five years, eight years of which were spent at the Army Institute of Pathology and the Army Medical Museum.

Dr. W. H. Feldman, of the Mayo Foundation, Rochester, Minn., is chairman of the AVMA committee on Registry of Veterinary Pathology, with Dr. H. W. Schoening, chief of the Pathology Division, BAI, and Maj. T. C. Jones, V.C., as committee members.

### Veterinary Service for the K-9 Corps

The vital rôle played by the Veterinary Corps, U. S. Army, in maintaining the health and efficiency of all war dogs used in World War II is emphasized by the exhibit built around a veteran war dog, which was displayed during January at the Smithsonian Institute and was moved to the Pentagon Building Concourse, Washington, D. C., on February 6.

Eighteen thousand dogs were acquired for the Army during World War II by the Remount Branch of the Quartermaster Corps which gave them basic training and issued them to the troops. Prior to that time, dogs had not been included in an official War Department activity. In World War II, war dogs were used for many purposes, chiefly sentry, attack, and scouting duties.

Germany used dogs in World War I and had 50,000 trained dogs on duty when World War II started. Germany gave Japan 10,000 trained dogs to be used in the China, Burma, and Pacific campaigns. Russia and England also used dogs in large numbers. Their use by the enemy was first observed in the desert warfare in North Africa. They were used to carry light ammunition, machine guns, as sled dogs, first aid dogs, wire laying, guard, mine detecting dogs, for detecting chemical agents, as messengers, and as spotters for wounded men in the field.

To maintain these dogs at a high peak of efficiency, a plan was devised by the U. S. Army Veterinary Service to establish measures for the prevention and control of animal diseases that cause animal inefficiency or might be transmitted to troops, as well as medical and surgical treatment to individual dog patients.

There were four diseases of dogs that became of considerable military significance: rabies, canine distemper, canine leptospirosis, and canine filariasis (heartworm). Control of these diseases overseas was a far more difficult problem than in the United States. For example, war dogs obtained from civilian own-

ers in the Hawaiian Islands and trained by the Army were not immunized against rabies because this area is one of the few rabies-free countries in the world—England, Australia, New Zealand, and the Hawaiian Islands. In many overseas theaters, our war dogs were exposed to other communicable diseases which do not exist in this country, and in many foreign countries where our war dogs were used, there is no system of control for prevalent and highly contagious diseases of dogs. These war dogs were loaned, or donated, to the Army, by civilian owners and represented not only a financial investment, when trained, of not less than \$2,000,000 but also proved to be a valuable asset to war objectives of the nation.

The establishment of new foci of infection for canine diseases in the United States at the time of demobilization and return of dogs to their original owners presented a veterinary and public health problem of national importance. Only those war dogs which had been proved to be free from infectious and communicable diseases were released to their civilian owners by the Remount Service.

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## BIRTHS

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To Dr. (WASH '40) and Mrs. Harry V. Scher, 5701 H St., Sacramento, Calif., a son, Harry V., Jr., Sept. 28, 1946.

To Dr. (MSC '45) and Mrs. Mac Cropsey, Curtiss Candy Farm No. 711, Cary, Ill., a daughter, Cimeron Cay, Dec. 15, 1946.

To Dr. (MSC '41) and Mrs. Norman J. Glucksman, 842 S. 19th St., Newark, N. J., a son, David Lawrence, Jan. 2, 1947.

To Dr. (MSC '42) and Mrs. Burton A. Ross, 801 S. 13th St., Newark 8, N. J., a daughter, Linda Joan, Jan. 22, 1947.

To Dr. (TEX '43) and Mrs. James W. Bailey, Winchester, Ill., a son, Nov. 26, 1946.

To Dr. (TEX '43) and Mrs. Marvin L. Crutcher, 601 W. 6th, Sedalia, Mo., a daughter, Diana Lee, Dec. 9, 1946.

To Dr. (OSU '46) and Mrs. J. E. Fox, New London, Ohio, a daughter, Carolyn Jane, Dec. 9, 1946.

To Dr. (MSC '42) and Mrs. D. L. Kerlin, 1111 S. Neil St., Champaign, Ill., a son, Brion Delm, Nov. 13, 1946.

To Major (UP '33) and Mrs. George H. Zacherle, Jr., 553 Graham Road, Fort Sam Houston, Texas, a daughter, Bonnie Dale, Nov. 14, 1946.

To Dr. (MSC '42) and Mrs. Bernard Goldsmith, 5401 Georgia Ave., Washington 11, D. C., a son, Richard Jay, Nov. 22, 1946.

To Dr. (OVC '30) and Mrs. L. M. Dingman, Prophetstown, Ill., a daughter, Martha Elizabeth, Dec. 28, 1946.

## DEATHS

**Glenn D. Ashley** (IND '11), 62, Thorntown, Ind., died Oct. 18, 1946. Dr. Ashley had been in the service of the U. S. BAI for many years, and he had been engaged in virus-serum control in Indiana for twenty-five years.

**Harry Brown** (IND '23), 53, Indianapolis, Ind., died Jan. 11, 1947. Dr. Brown had practiced small animal surgery in Indianapolis, Kansas City, Mo., and Portland, Ore., and had operated a small animal hospital in Fort Wayne for nineteen years, until a year ago. He was admitted to the AVMA in 1925.

**Arthur F. Baldwin** (ISC '02), 67, Miles City, Mont., died May 27, 1946, of coronary thrombosis. Dr. Baldwin had practiced in Creston, Iowa, and Miles City, also participating in state work in his district. He was admitted to the AVMA in 1916.

**O. P. Dickson** (CVC '07), 66, Homer, Ill., died May 29, 1946. Dr. Dickson had been engaged in practice in Homer for almost forty years.

**E. E. Dooling** (ONT '93), 76, Syracuse, N. Y., died Oct. 7, 1946, after a brief illness. He had completed a half-century of general practice in 1943, when he became managing director of the Syracuse Society for the Prevention of Cruelty to Animals.

**Edwin R. Flack** (CVC '96), Enterprise, Ore., died Oct. 22, 1946. Dr. Flack had been engaged in general practice since his graduation from Chicago Veterinary College in 1896.

**T. E. A. Giller** (CVC '92), 74, White Hall, Ill., died Sept. 11, 1946. Dr. Giller had been in practice in White Hall for over fifty years.

**Matthew E. Gleason** (CVC '06), San Antonio, Texas, died in 1946. Dr. Gleason had been a member of the AVMA since 1909.

**R. A. Hallquist** (KCVC '09), Brainerd, Minn., died Nov. 23, 1946. For a number of years, he was city dairy inspector of Brainerd.

**C. B. Hiatt** (IND '11), 68, Kewanna, Ind., died Sept. 25, 1946. He had been engaged in general practice in Kewanna. Dr. Hiatt was admitted to the AVMA in 1941.

**Jean Fray** (LYON), 85, Paris, France, honorary member of the AVMA, died Jan. 23, 1945, when news from France was interrupted by the war. General Fray was chief veterinarian of the French Army during World War I. A complete obituary appears in the Editorial Section of the February, 1947, issue of the JOURNAL.

**Earl S. Hinkle** (IND '09), 61, Centerville, Ind., died June 25, 1945. Dr. Hinkle was admitted to the AVMA in 1941.

**Harry W. Jakeman** (UP '09), 61, Boston, Mass., died Dec. 23, 1946. Dr. Jakeman founded the New England Veterinary Medical Association and was a past president (1941-1942) of the AVMA. A complete obituary appears in the Editorial Section of the February, 1947, issue of the JOURNAL.

**Roy D. Lorton** (CVC '16), 56, Ennis, Texas, died in the latter part of 1946. Dr. Lorton was admitted to the AVMA in 1918.

**J. R. McCarthy** (ONT '15), 55, Detroit, Mich., died Nov. 14, 1946. He had lived in Detroit for thirty-one years and engaged in private practice. He had also been veterinarian to the Detroit Zoological Park and Detroit Police Department.

**S. B. McDougal** (NYCVS '92), 79, Cleveland, Ohio, died Nov. 5, 1946. He had practiced in Youngstown for more than forty years, then moved to Grove City, Pa., ten years ago. He retired in 1941, and moved to Cleveland in 1944.

**Karl W. Niemann** (KSC '29), 44, Madison, Wis., died Jan. 9, 1947, in Japan from burns received in a fire at the officers' quarters where he was stationed on Honshu Island. Capt. Niemann had worked in the Wisconsin veterinary control laboratory before his entrance into service, July 20, 1942. He had been overseas for fifteen months in the Philippines and Japan. He was admitted to the AVMA in 1929.

**C. G. Rohrer** (NY-AMER '08), 66, New York, N. Y., died Sept. 15, 1946. He had been a member of the AVMA since 1913.

**L. S. Rohrer** (KCVC '11), 74, Clyde, Kan., died Nov. 27, 1946, from a heart attack. After a period of time as a field veterinarian in Missouri and Texas, he worked in Kansas City and St. Joseph as supervisor of hog cholera serum and virus control. For seventeen years before his retirement in 1946, he was in government service in Omaha, Neb.

**H. M. Rowe** (ONT '88), 78, Ogden, Utah, died on Oct. 20, 1946. After ten years of practice in Clinton and Marion, Iowa, he entered the U. S. BAI in 1898 in meat inspection at South Omaha, Neb. Later, he was transferred to Ogden where he was prominent in commercial and civic activities.

**William E. Stribling**, 65, Des Moines, Iowa, died Jan. 9, 1947, in his hotel room in Omaha, from a heart attack. He had been temporarily employed in Omaha.

**Walter K. York** (KCVC '12), 55, Monticello, Ind., died Dec. 22, 1946. A complete obituary appears in the Editorial Section of the February, 1947, issue of the JOURNAL.

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